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With a Supplement

on

Social and Economic Consequences on the Instalment Plan

By
WILBUR C. PLUMMER

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CONTENTS

FEDERAL VERSUS STATE JURISDICTION IN AMERICAN LIFE

PAGE
FOREWORD v

PART I. FEDERAL AND STATE SOURCES OF REVENUE

NEED FOR READJUSTING THE FISCAL SYSTEM OF THE UNITED STATES 1
Edwin R. A. Seligman, Ph.D., Columbia University

WAYS AND MEANS TOWARD EQUITABLE ADJUSTMENTS OF STATE AND FEDERAL TAXES 9
W. B. Belknap, M.A., University of Louisville

FEDERAL CO-OPERATION IN STATE SOURCES OF REVENUE 16
Hon. Mark Graves, Commissioner, New York State Tax Department

WHY FEDERAL AND STATE BASES OF TAXATION SHOULD BE SEPARATE ... 21
Zenas W. Bliss, Chairman of the Rhode Island Board of Tax Commissioners

PART II. CHILD LABOR AND THE FEDERAL GOVERNMENT

THE CHILD LABOR QUESTION AND THE FEDERAL GOVERNMENT 28
Owen R. Lovejoy, Chairman, Executive Committee, National Child Labor Committee

IS CHILD LABOR A GOVERNMENT OR STATE QUESTION? 34
James A. Emery, Counsel, National Manufacturers' Association

STATE VERSUS FEDERAL REGULATION OF THE LABOR OF CHILDREN 41
Howell Cheney, Connecticut State Manufacturers' Association

THE STATE'S RESPONSIBILITY TOWARD CHILD LABOR LEGISLATION 59
Paul U. Kellogg, Editor of *The Survey*

THE DEFEAT OF THE TWENTIETH AMENDMENT 65
Thomas I. Cadwalader, Chairman, Sentinels of the Republic

WHAT THE NATIONAL CHILD LABOR COMMITTEE IS DOING AT THE PRESENT TIME 70
Wiley H. Swift, Acting General Secretary, National Child Labor Committee

PART III. SOME PHASES OF STATE AND FEDERAL CONTROL

THE STATE, THE NATION AND THE PEOPLE'S NEEDS 72
Hon. Gifford Pinchot, Governor of the Commonwealth of Pennsylvania

PROHIBITION ENFORCEMENT AS A PHASE OF FEDERAL VERSUS STATE JURISDICTION IN AMERICAN LIFE 77
Hon Lincoln C. Andrews, Assistant Secretary of the Treasury, in charge of Prohibition

SOCIAL ASPECTS OF FEDERAL AND STATE CONTROL 88
Samuel McCune Lindsay, Ph.D., LL.D., Professor of Social Legislation in Columbia University

PART IV. EXTENSION OF FEDERAL INFLUENCE IN EDUCATION

THE CONTROVERSIAL SUBJECT OF FEDERAL CONTROL IN EDUCATION 95
Dr. Frank Pierrepont Graves, President of the University of the State of New York and State Commissioner of Education

WANTED: AN ACTIVE COÖRDINATED GOVERNMENT BUREAU OF EDUCATION 97
Dr. Samuel P. Capen, Chancellor, The University of Buffalo

FEDERAL SUBSIDIES FOR EDUCATION 102
Austin F. Macdonald, Ph.D., University of Pennsylvania

STATE AND FEDERAL JURISDICTION IN EDUCATION 106
Charles R. Mann, Ph.D., Director, American Council of Education

PART V. POWER DEVELOPMENT AND ITS SUPERVISION

THE DILEMMA OF GIANT POWER REGULATION 110
John H. Gray, Washington, D. C.

THE CONCENTRATION OF CONTROL IN POWER 118
H. S. Raushenbush, Secretary, the Committee on Coal and Giant Power, New York City

FEDERAL AND STATE RELATIONS IN THE CONTROL OF POWER DEVELOPMENT AND DISTRIBUTION 126
Hon. Philip P. Wells, Deputy Attorney-General, Commonwealth of Pennsylvania

FEDERAL VERSUS STATE JURISDICTION OVER POWER DEVELOPMENT AND ITS SUPERVISION 132
O. C. Merrill, Executive Secretary, Federal Power Commission

PART VI. CORPORATION CONTROL BY THE FEDERAL GOVERNMENT

MORE GOVERNMENT IN BUSINESS—DOES WALL STREET NEED IT, OR MAIN STREET WANT IT? 138
Gilbert H. Montague, of the New York Bar

FEDERAL REGULATION OF CORPORATIONS UNDER THE COMMERCE CLAUSE 143
Abram F. Myers, Federal Trade Commissioner

STATE REGULATION OF CORPORATIONS BY POLICING SALES OF SECURITIES 149
Hon. Keyes Winter, Deputy Attorney-General of the State of New York

FOREWORD

This volume contains the addresses delivered at a conference held under the auspices of the Academy in Philadelphia on October 29 and 30, 1926. The conference was attended by delegates appointed by the governors of many of our States as well as by many who represented educational institutions and other organizations.

The topic was chosen because of its outstanding importance for the American public. The relation between the Federal and the State governments is of necessity one that gives many opportunities for difference of opinion and that changes with the passage of time. There will always be disputes over the wisdom of having jurisdiction exercised by one rather than by the other governing body. Recently there has been a revival of the discussion which has suggested to many the arguments over States' rights so acute many years ago.

This problem has appeared in many fields and those in charge of the program for the Academy meeting decided to choose four specific illustrations and devote a session of the meeting to each. These illustrations were taxation, child labor, education and power development. The two evening sessions were of a general nature, dealing with a number of special phases of the general problem.

Every attempt was made to balance each program by securing representation for each of the important points of view. For the most part these efforts were successful, although in a few cases the balance was not so even as was desired. Any failure to present adequately the opposing views was due to circumstances beyond control.

The topics discussed are extremely important in American life and the contributors are so distinguished that the Academy presents the volume with satisfaction and with the belief that its publication will be a distinct service.

Ernest Minor Patterson,
Editor in charge of this volume.

Need for Readjusting the Fiscal System of the United States

By Edwin R. A. Seligman, Ph.D.
Columbia University

IN this series of discussions on the relations of the state and the Federal Government, there is one point hat I should like to emphasize at the utset. It is this: that well-nigh all ur modern political problems may be xplained in terms of economic life. lthough one need not be a devotee of he economic interpretation of history, here is little doubt that the economic conditions which surround the common man in his endeavor to make a living have from the beginning greatly influenced the political life.

This is especially true of the problem of the fiscal relations of state and Federal Government. For the attempt to take out of the pockets of individuals by coercive means a part of their wealth naturally strikes at the very nerve center of economic life. The relations between economics and finance are accordingly peculiarly intimate, and afford a clue to the understanding of the present-day fiscal problems, not alone in the states, but in the nation at large.

Following out this line of thought, let me recall to your mind the conditions as they existed when our present Constitution was adopted. For all of our problems, fiscal and otherwise, so ar as the relations of state and Federal Government are concerned, are of ourse to be treated within the framework of our Constitution. No matter ow beautiful a theory may be, no atter how admirable a plan may e, if it is unconstitutional, that settles it.

Impotence of Early Government

What took place at the time that the Constitution was framed? As we all know, when the colonies came together in order to make a common front against the foe, they had to struggle to survive those seven years of intensive strife. In the meantime, the Articles of Confederation were adopted. Under this loose union there ensued the difficult period which lasted for several years. The embarrassment arose from two sources. We have had many books written to explain the origin of our Constitution, but one of the chief reasons has never been emphasized. When a real history of the United States comes to be written, it will be found, without much doubt, that the troubles of 1767, the troubles of 1775 and 1776, and in like manner the troubles after the Treaty of Peace, were due to something that we are only beginning to understand, namely, the business cycle, the ups and downs of enterprise and of prosperity. Without going back to the earlier period which has never yet been thoroughly investigated, it so happened that during the eighties we were in the midst of a serious business depression which greatly intensified the difficulty of the situation.

The other and perhaps the main reason why we were not able to cope with the crisis was the impotence of the central government. When Robert Morris, the wealthiest man in Philadelphia, came to rescue us from our troubles toward the end of the Revolution, and when he even put into the pot his own private fortune, he struggled in vain to persuade the states to grant to the Confederate Government an independent revenue; he failed and partly as a result of his failure to accomplish this, he resigned. Moreover, not alone did the central government have absolutely no power at home, it had also no power abroad. Several of the states sent embassies abroad in order to borrow money, thus competing with the central government. But above all, each of the new sovereign states looked out for its own separate interests, erecting all manner of interstate barriers, and throwing all kinds of difficulties in the way of the other states.

In other words, business suffered under a double handicap. We could not get a market for our products outside of the narrow confines of our own little locality, and we had, moreover, to cope with the additional difficulties of a business depression.

WHAT THE CONSTITUTION ACHIEVED

Fortunately there was one man that recognized the source of the trouble. You will remember Lafayette's statement in his later years that he had known many great men, including Napoleon and Metternich, Pitt and others, but that there was not one who could be compared in ability with Alexander Hamilton. Hamilton persuaded a few states to come together to consider commercial problems and out of that grew a wonderful convention and our present Constitution.

This Constitution was framed as a result of a great compromise on the basis of the existing economic conditions. Only a minimum of power was granted by the sovereign states to the central government. Certain things indeed were indispensable, as had been learned not alone in the Revolution, but in those dark years of the later crisis. Thus there was handed over to the Union first the control of the Army and Navy; second, the management of the Post Office, in order to maintain communication among the different states; and third, the control of the coinage.

These were the chief things which had been forced upon the country by the sad experiences of the war. There were, however, three or four other matters which the Convention thought it desirable to take away from the states, and which encountered no objection. The first was the control of the public domain. It will be remembered how immediately after, or even before, the treaty of peace, the separate states transferred to the Confederate Government, for the common enjoyment and the public good, all the outlying Western land which belonged to them under the original grants from the King. The control of the public domain now became a part of the Federal activities, and the hoped-for revenue from the domain was to be devoted to paying the national debt. In the next place the control of foreign commerce was turned over to the central government, and with it also the entire field of foreign credit. From now on, it became impossible for the states to borrow money abroad in competition with the Union. Then came the powers granted to the Union to control the economic relations among the states. This was really the motive force in the original efforts of Hamilton to revive the business life of the nation. Federal control over interstate commerce is the basis and secret of our economic prosperity. What we did was in effect to create a national market for all local productions—a market untrammeled by any restrictions or limitations. That is precisely what they are trying to do in Europe today. It is the one great thing that has made this country what it is.

Independent Revenue for the Government

Finally, the last object achieved by the new Constitution was the one for which Morris had striven in vain, an ndependent revenue for the new central government. Up to that time, all through the war and during the lean years after the war, the central government was supported, apart from the paper money and the loans from France and later from Holland, by contributions from the states, the so-called requisitions. The trouble was that Congress "required" the states to support the Union, but that the requisitions were not honored. The one ndispensable need outside of the control over interstate commerce was to secure for the Federal Government an independent source of revenue.

While this explains the chief economic provisions of the Constitution et me call your attention to the fact that while most of the points represent exclusive rights, willingly handed over by the states to the Federal Government, two of them were concurrent privileges. Of these commerce was one. For the Federal Government received only the right to control nterstate commerce, while intrastate commerce remained within the purview of the separate commonwealths. The second concurrent privilege was the matter with which we have specifically to deal, revenue. While the Federal Government was given an independent revenue, yet to only one thing did it have an exclusive right, taxation in the orm of import duties. No state could mpose a customs tariff. In all other respects, as to which nothing was said, we have to deal with concurrent rights of the states and the Federal Government.

In the one hundred and fifty years that have elapsed since the adoption of the Constitution, the economic life of our country has developed into something far different from that of the primitive community, the little agrarian economy with a sprinkling of people on the seaboard, with no industry to speak of, and with nine people out of ten farmers. As a consequence, the Constitution has been molded, either by change, through the process of amendment, or by the ingenious method of interpretation. The very first thing that was done was when Hamilton persuaded Washington to accept the principle of a national bank. Had the Federal Government the power to charter a bank? "No," said Jefferson, and repeated the Attorney-General, "There is no such grant of power in the Constitution." Then Hamilton invoked the doctrine which, in the hands of Marshall, revolutionized conditions in this country, the doctrine of implied powers. Since that time the control of banking has become one of the concurrent powers of government. We have had and still have Federal banks, as well as state banks.

In another respect also there has been a change. The states, learning by sad experience, after the yellow fever in Louisiana, after the cholera in New York, turned over to the Federal Government some of the control of public health, so that we now have a national quarantine and no longer, as before, a state quarantine. And so in other matters like bankruptcy, for instance, which do not come within our purview in this article.

Involuntary State Restrictions

There are only two points in which the powers of the states have been involuntarily restricted: the one, when slavery was declared unconstitutional, and the other when the 18th Amendment was enacted. As to these points let me call your attention to the confusion that exists in so many minds today. We have been talking a good deal about governmental central rights, and state privileges. Until the 18th Amendment, however, every extension of central power, interpreted in economic terms, had to do with production. Even slavery, from the point of view of the South, was concerned with production. The significant change in the 18th Amendment, and the reason why it arouses so much opposition on the part of a growing minority in this country is that, for the first time in our history, the central power is extended to matters of individual consumption. That is the real reason why it is so resented. All other matters such as corporate control, power regulation, education, labor—all these deal, economically interpreted, with the question of production. In the 18th Amendment for the first time in our history the power of the central government was invoked to interfere with habits of consumption. This is essentially a return to medieval conditions, when government continually enacted its ill-chosen sumptuary legislation, deciding exactly what a man should or should not eat, drink, or wear. Modern life has brought us to the conception that there is something in the individual which should be sacred from such attacks. The endeavor to interfere with the personal habits of consumption is justified, if at all, only when, as in the case of opium, its continuance spells national disaster. No one can claim that temperance, that is a temperate use of drink or food, can lead to national disaster.

We must draw the line sharply between production and consumption. In problems of production, such as factory laws, child labor, corporat control, and the like, the minority wil always give way to the majority an adjust itself to the prevalent opinion But in the matter of consumption th individual will never give up what h considers his inherent rights as separate being. We shall fail to reach a proper basis for the discussion o national prohibition until we learn t distinguish between the field of production, where a national minimum ca properly be proclaimed, and the field o consumption, which it is utterly vai to hope to regulate by the exercise o national powers.

FACING FACTS IN A CHANGING ORDER

But whatever may be the truth here the point which I desire to emphasiz is that our Constitution as originall framed was a simple expression of th economic needs of the time. Have yo ever reflected that the problems tha confront us to-day are due to the fac that, when our Constitution wa adopted one hundred and fifty year ago, economic conditions were differen from what they are to-day, and tha the constitutions of other Federa States, adopted under different economic conditions, vary in importan particulars from ours? Why is it tha our neighbors across the border, i Canada, have gotten along about as wel as we do—certainly no worse—with a absolutely opposed constitutional theory? Our theory is that all powers no granted to the Federal Government ar reserved to the states and the peopl respectively. The Canadian theory i that all powers not expressly granted t the states, or the provinces, are reserved to the central government What the ordinary lawyer in this country still considers sacrosanct does no exist in Canada or in other parts of th world. Take the Australian Constitution, take the South African Constitu tion, and take, what is perhaps the most significant of all, the German Constitution, the new democratic, republican German Constitution forged as the result of the economic pressure of the Great War. What do you find? You find just the opposite of what you find here in the United States. You find things for which we are not ready and shall not be perhaps until we have another great war, an internal war. What would you think of a situation as in present-day Germany, where the central government has the power not only over marriage and divorce and labor and general legal conditions, but where all the important revenues are collected by the central government and then by it apportioned out to the states and localities? Conceive of that in this country! Yet, under the pressure of changing economic conditions, that was brought about in Germany because the sole way of meeting the reparations, which were a Federal obligation, was by centralizing all the powers in the imperial government.

What we need first and foremost is to rid ourselves of shibboleths, of prejudices, of prepossessions, the outgrowth of conditions of a century and a half ago. There is little use of saying, "We have got to obey the Constitution," if in the Constitution there are imbedded regulations which no longer respond to actualities. We do not practice obedience to either the 15th Amendment or the 18th Amendment. The only way to prevent us from degenerating into a lawless anarchistic people, as is fast developing in this country, is to conform your fundamental law to your economic facts. You cannot change the economic facts. No individual can, no government can. The only wise thing is to change your fundamental law so as to be in harmony with the new conditions.

TREND TOWARD FEDERAL TAXES ON WEALTH

What is the application of this to the problem of state and Federal revenue? Let us consider the stages through which we have gone in adjusting ourselves to these changes in economic life. At first, as I have pointed out, there was no Federal revenue at all. The Federal Government was supported by the states, which had all the sources of revenue. Then came the present Constitution, inaugurating a situation which down to the Civil War was unaltered with the exception of the short periods of war and of preparation for war. Well-nigh all changes in finance and taxation are due to war. In fact, fiscal science is sometimes called a war science; it is only now becoming a peace science. Most of the fiscal changes that we find in this country up to recent years have been due to war or the fear of war.

In the second period, which started in 1789, the Federal Government limited itself with two exceptions to a single source of revenue, namely, from import duties, while the states and localities employed all the rest. The exceptions occurred when we were threatened with war with France and when we actually had war with England. At those conjunctures, because of the necessity of securing more revenue than was derived from the import duties, we find, first, internal indirect taxes, which under the Constitution must be uniform, and which were now levied almost exclusively by the Federal Government. In the second place we find Federal taxes on wealth. I shall not stop to recall that great fight in the Constitutional Convention as to the provision making the assessment of direct taxes depend not upon wealth but upon representative population. I want simply to call attention to the fact that during these anxious times a real estate tax and an inheritance tax were adopted; and had the War of 1812 lasted three months longer, we should have had the first income tax. For the Committee on Ways and Means reported in favor of an income tax; and although many of the framers of the Constitution were still living, there was not one who considered the income tax, in the constitutional sense, a direct tax. As soon, however, as the war was over, we find that all the powers of taxation save that exclusively reserved to the Federal Government, namely, import duties, were exercised solely by the states. For nearly half a century, there was a clear cut line of division between Federal and state revenues—import duties for the one, property taxes for the other.

Then came the Civil War from which we learned a great lesson. Had the other forms of taxation been in existence, had it been possible, in other words, to utilize an internal revenue at once and not wait a year and a half before the new machinery could be put in order, we should never have had the fiscal troubles which we encountered during the war; and we should in all probability never have been compelled to issue the greenbacks. As it was, we learned the lesson during the war, and by 1872, when all the war taxes had been abolished, we retained for the Federal Government internal duties on a few articles such as whiskey, tobacco and beer. Thus the third period witnessed the utilization by the Federal Government not alone of import duties, but of internal indirect taxes, while the great domain of direct taxes on wealth was still reserved to the states.

Finally came the changes brought about first by the economic development of the beginning of the 20th century, and then by the preparation for the Great War. We now find in Federal revenues direct added to indirect taxation. First, we had the Corporation Tax of 1909, disguised for constitutional reasons under the name of the Excise Tax. Next came the movement by President Taft to head off the impending income tax by recommending a Federal inheritance tax; and, finally, just in the nick of time for the war, came the adoption of the income tax.

As a result, we have entered upon the most recent period where the central government depends to only an insignificant degree upon import duties and to a slightly greater degree upon internal indirect taxes, but where it has come to rely principally upon direct taxes—the income tax and the estate tax. On the other hand, the states have not only kept the general property tax, but some of them have an income tax, more have an inheritance tax, and all have various forms of indirect taxes, such as taxes on transactions, on stock exchanges, and on certain raw products. They had, before the 18th Amendment, taxes upon liquor, and now they have almost everywhere the gasoline tax. In other words, both the Union and the states have come to depend on what are largely identical, or at least equivalent, sources of revenue—both direct and indirect taxes. This fact is responsible for most of our present-day problems. Let me in conclusion call attention to the chief considerations which must guide us in approaching a solution of these problems.

ADJUSTING FISCAL SYSTEM TO ECONOMIC FACTS

In the first place, let us face the situation as it is, and abandon the outworn shibboleths. Let us talk no more of states' rights; let us hear no more of the idea that certain revenues belong naturally to the states and that others belong naturally to the Federal Government. All this is belated. It belongs to the infancy of economic and political thinking. In view of the economic situation as it exists, how can we adjust our fiscal system to the economic facts? Here we are fortunately exempt from the necessity which confronts Germany. We do not have to meet a crushing external obligation, which overshadows everything else. But still we are not exempt from the imperious dictates of economic conditions. From that point of view there are three considerations that must guide us.

First, the principle of adequacy: how much money is needed by the states and the local governments as against the Federal Government? Second, the principle of efficiency: which will work better under actual conditions, a state or a Federal tax? Third, and most important, the principle of suitability: which tax is best adjusted to the underlying economic basis?

As regards adequacy, we thought at one time that Federal expenses would soon be almost negligible as compared to those of either the states or the localities and that the expenses of the Federal Government would continually diminish. But under war conditions and the aftermath of the war, it is different. At present we are spending for the Federal Government much more than for the states and almost as much as for the localities. And the prospects of permanently reduced Federal expenditures, in the four of the new methods of subventions to the states for roads and other things, are not especially bright. At all events, the problem of Federal finance once again looms large in actual fiscal life.

As to efficiency, there has been a decided trend toward centralization. Many sources of revenue which were formerly local are now controlled by the states because of the greater efficiency of centralized administration. It is a familiar fact that the chief progress in state and local taxes has been made in those states which possess state tax commissions with more or less centralized powers. And it is at least open to question whether up to a certain point at least the same considerations are not applicable to Federal taxation.

This brings up, however, the question of suitability. There are, of course, certain taxes which ought always to remain state and local in character. The real property tax, for instance, can best be levied by local assessors. Moreover, under the Constitution we cannot put a Federal tax on land because the tax would have to be assessed not on the value of the land, but according to the number of people in the state. If we had a direct tax on land, let us say in states like Massachusetts and Mississippi where the relative population is about in the ratio of two to one and the relative wealth in the ratio of seven to one, a tax on a farm of given value would be from three to four times as high in Mississippi as in Massachusetts. A Federal real estate tax, accordingly, is economically impossible.

Without taking up all the other taxes in detail, it may suffice to call attention to the fact that there are certain revenues, the source of which has developed from a local and a state basis to a national basis. Wherever an economic phenomenon which has become national in character is compressed within the mold of state control, we find the emergence of the problems of interstate income, interstate business, and interstate capital, which are vexing all of our commonwealths today. And when the conditions of ownership have transcended state lines, we have the additional problem of conflicting and overlapping state regulation, as in the modern inheritance tax with its duplicating, not to say triplicating, of burdens.

As to this, it is obvious that there is only one solution for such a problem. Where the economic basis has become national, the economic structure must perforce in the end be national. This does not necessarily mean that the revenue must be collected by the Federal Government; but it does mean that at least the control must be centralized. All this talk about state rights and naturally reserved revenues is unavailing. It is bound to disappear before the facts. We have already accomplished this result in one matter. The state taxation of national banks has been made uniform in this country because the decisions of the Supreme Court have enabled Congress to enact an appropriate law, which limits the activity of the states and which thus regulates the subject. We have not yet begun to approximate that result in the estate tax or the inheritance tax or the income tax or the corporation tax, but we are moving.

It is impossible to think that a practical nation like ours will continue forever to allow an out-worn political creed to interfere with business conditions and with justice in economic life. So far as the Federal and state revenues are concerned, what is slowly coming about, and what must of necessity come about in ever increasing measure, is a division whereby there will be left to the states and localities certain taxes which do not indeed politically belong to them but which for economic reasons are most suitable to them; and that there will be put under the control of the Federal Government, at first if possible through judicial decision, then, if that fails, through legislative regulation, and finally, if needed, through central administration, those sources of revenue which have a nation-wide economic basis, or which imperiously demand a uniformity of assessment and collection, in order to attain fiscal justice.

There is thus one lesson to be learned, which can never be overemphasized. Let us no longer be guided by the lawyers who so often look backwards, and whose hands are tied by effete constitutional traditions. Let us no longer listen to the politicians who weary us with their old slogans and out-worn shibboleths. Let us study the actual economic conditions, and especially the ownership and distribution of wealth as among individuals and classes; for these are the things of fundamental importance. The sooner we adjust our fiscal relations, today so badly confused, to those underlying facts, the better for all concerned. Vain is the hope of those who expect to stem the incoming tide and to roll back the torrent of new and impending economic changes.

Ways and Means Toward Equitable Adjustments of State and Federal Taxes

By W. B. Belknap, M.A.
University of Louisville

THE problem as to what should be the sources of state revenue and what Federal is not new. Any schoolboy knows that this question has been a difficult one from the American Revolution until the present day; nor will we solve it here nor will anyone else solve it anywhere else before the millenium. What perhaps we might do would be to lay down some generalizations as to what is a proper practical division in certain particular cases, or we might state some underlying theories, or we might do both, but the lasting importance of such pronounciamentos will be doubtful. What we may be able to do and I believe we ought to do is to try to discover a method of approaching these problems that will bring relief at such times as relief is needed.

The relation of state government to Federal government is a dynamic relation and its problems cannot be solved once and for all any more than the problems of life itself are capable of definite and final solution. For a general statement of state and Federal relationship we cannot do better than to read the now ancient words of Madison:

> The powers reserved to the several States will extend to all the objects which, in the ordinary course of affairs, concern the lives, liberties and properties of the people, and the internal order, improvement and prosperity of the State. . . . By the superintending care of these (the States), all the more domestic and personal interests of the people will be regulated and provided for. With the affairs of these, the people will be more familiarly and minutely conversant.

John Fiske, the historian, says:

> If the day should ever arrive when the people from the different parts of our country should allow their local affairs to be administered by prefects sent from Washington and when the self-government of the States shall have been so far lost as that of the Departments of France, or even so far as that of the countries of England, on that day the progressive political career of the American people will have come to an end and the hopes that have been built upon it for the future happiness and prosperity of mankind will be wrecked forever.

I believe these two quotations express the real creed of most Americans to-day concerning state influence. But in practical application they do not help much when applied to actual problems of state and Federal jurisdiction. Let's try for a more realistic method of approach.

WHAT ARE THE PROBLEMS?

First, we must definitely see what the problems are. We know already that a conflict exists. This conflict is often spoken of as "between the Federal Government and the states." That is on the face of it a misnomer. It is a conflict between those who are generally spoken of as "states rights people" and those who believe in a greater centralization of power and activity at Washington. It sometimes becomes a conflict for jurisdiction between Federal officials and state officials. But we are all citizens of states and all citizens of the Federal Government and there is no such thing as a federal government separable enough from the states to be in conflict with them. We cannot split ourselves into two citizens to fight against each other—one representing the state citizen and one the Federal citizen. The conflict we are to discuss is then a conflict of ideas and of theories within the body politic. The general acceptance of the matter as a "Federal versus State" matter forces us however to accept this nomenclature.

What is not generally recognized is that many if not most of the difficulties that arise in this connection are really difficulties as much of state being in conflict with state as with the Federal Government. This is often confused with the conflict between the states on one side and the Federal Government on the other. Very often it is a three-sided fight—the states against each other and they against the Federal Government. Perhaps the clearest examples of the intricacies of this type of conflict are to be seen in inheritance and income taxation.

When the death tax muddle was at its worst, as many as five different states might have claimed the right to tax one estate under certain given conditions. On top of this was the Federal Government tax one states. Theoretically the total taxes to be demanded from an estate might have reached a rate of something like 300 per cent. Furthermore, the tax laws of each state were different. The cost to the taxpayer of finding out what his taxes were was often more than the tax itself. It took waivers from seven different states to transfer one share of stock of a certain railroad from the estate of a decedent to a beneficiary. The settlement of an estate of any size could be and was often held up almost indefinitely by the questions arising from the settlement of the Federal tax. Three years was considered a normally short time within which to arrange the settlement of the Federal estates tax.

In this situation there was, then, unjust and uneven multiplication of taxes, great expense of payment and inexcusable delay of settlement. Nor were these troubles confined to the settlement of large estates. The evil was a very real one for all estates containing any securities. It was as good an example of a shameless fight for sources of revenue as could well be imagined. The several states claimed jurisdiction enough for tax purposes over estates upon every conceivable pretext—and the Federal Government also claimed this jurisdiction. The natural result was confusion worse confounded. In the language of the cowboy it was as bad as possible and continually getting worse. It was state against state and the Federal Government against them all. Evidently something would have to be done.

A CONTROVERSIAL SUBJECT!

Professor Seligman has suggested as a solution that we abolish all state inheritance taxes and leave the whole matter to the Federal Government.[1] When I first tackled the problem I was fully convinced that this was the right solution. If, like a late magistrate of Louisville, I had shut off discussion at that point I should have saved myself much puzzling thought and much mental worry. This said magistrate in a certain case informed the lawyer for the defense when he arose that he could sit right down, he didn't want to hear any more. He had heard the plaintiff and made up his mind and it only confused him to hear both sides of the question. I think at times we have all felt the same way whether or not we have been honest enough to admit it.

[1] See p. 1.

Later, when I had studied the states' side of this question for a couple of years, I turned the other way around and stood side by side with the gentleman from Rhode Island, Governor Bliss.

In the first place, I saw that from a practical point of view it was going to be a political impossibility to get through a constitutional amendment forcing the states to relinquish the necessary power to the Federal Government. In the second place, if there was one logical branch of the government to collect this tax, it was the branch that had jurisdiction over the settlement of estates of decedents—namely, the state government. And again, there were certain states whose financial development had been such as to make this tax an essential part of their revenue. It was not an essential part of the revenue of the Federal Government. The states controlled the proper machinery of collection, *i.e.* the probate courts. Again, they had no available substitute for the yield from this tax as a source of revenue.

Those who advocated the Federal Government as the sole collector of death taxes usually favored a nebulously stated return of part of the money to the states. They were never able to offer a satisfactory formula for just how the share going to the states was to be apportioned. Were taxes from real estate to go to the state of situs; taxes from securities, partly to the state of domicile, partly to the state of incorporation, and partly to the state of situs of the property of the corporation? A mere reading of these questions will show how impossible it would be to answer them satisfactorily. By turning the collection over to the Federal Government, these questions would not really be settled; they would simply be transferred to a different battlefield. They would cause log rolling and bickering in Congress between states for all time to come. Each state would be forever jockeying to get more of the proceeds.

The impossibility of abolishing the state taxes was evident, but so was the impossibility of having the chaotic condition of this tax continue. It looked at this time as though the proper solution was the reform of the state taxes and the abolition of the Federal tax.

Then came the disturbing element which so often enters into these problems of jurisdiction—cut-throat competition between the states. Florida, in an effort to advertise the fact that she had no death taxes, passed what was under the circumstances an almost meaningless constitutional amendment. It simply said she never would have. Certain other states followed suit or were preparing to follow suit. Very evidently this establishment of havens of refuge for the rich would take most of the yield from the inheritance tax in those states that were dependent upon the revenue. Very evidently the states were not going to yield to the Federal Government sole power in death taxes; Florida was not going to be enthusiastic about any plan which robbed her of this pet publicity item. States dependent on this source of revenue, like New York, could hardly be expected to do so. That solution on the face of it was out of date. Equally true was it that simply abolishing the Federal estates tax would not have helped the evil of the overlapping state taxes. It would not have cured the newly recognized evil of unfair competition for wealthy residents but would have aggravated it.

SETTLING INHERITANCE TAX PROBLEM

It was at this juncture that President Coolidge suggested to the National Tax Association that it call a conference in Washington. Delegates came from most of the states and from a number of the universities. The President himself addressed the assemblage and so did a number of members of the Ways and Means Committee of Congress. The difficulties of the situation were thoroughly pointed out and a committee was appointed to work on these problems. This committee drew up a model law for the states, it cooperated with the Ways and Means Committee in working out a reasonable rate for the estate tax and suggested the present eighty per cent deduction from the Federal estates tax for state inheritance taxes paid and urged upon the states that they do away with the non-resident taxes.

The fixing of the Federal deduction in such a way as to allow the states to take a fair tax without penalizing estates, has tended to standardize state rates; and whether or not rates are standardized among the various states, estates of the same size will in most cases pay approximately the same tax regardless of whether the former owner was a resident of Florida or of New York. This solution has left the states the right of self-government, but above all it has prevented the confusion that was bound to result from the unfair competition for the favors of wealthy residents.

Along with the Federal deductions allowed for state taxes has come a very gratifying response to the demands that the non-resident taxes of the states be either eliminated or made as unobjectionable as possible. This recent adoption of more intelligent laws with regard to non-resident estates has come largely in response to the efforts of Senator Edmonds. Along with this the courts have thrown out some of the objectionable acts, and those of us who have been interested in the subject feel greatly encouraged at the outlook. We feel that state inheritance taxes have been reserved for those states that need them; that the Federal revenues will benefit in the cases of states who do not; that a mild coercion on the part of the Federal Government bids fair to serve our purpose; that we are using intelligent means of settling the conflict instead of resorting to the Club of Centralized Power.

The reasons for going so extensively into a subject not of supreme interest to everyone generally, is that the methods used in this case of the inheritance tax muddle can well be used in other cases of conflicting jurisdiction between the various states and between them and the Federal Government. This method will not, of course, be infallible—nor is it always applicable. In cases where states persist in unfair competition, whether in bidding for incorporation fees or for divorce proceedings or for sources of revenue, it will become necessary—after all other means fail—to centralize in the Federal Government the power requisite to bringing order out of chaos.

Where a reform sought is one in which honest differences of opinion occur in different states or different sections either as to aim or methods, then each state or each section should be allowed to work out its own salvation so long as it does not trespass too severely upon the rights of the other states. And we should not force upon the country the supposed cure-all of centralization of power.

Most problems of jurisdictional dispute over which there is much discussion belong to one or more of three classes; either

(1) where there is general agreement between the states and the Federal Government as to the object sought, but where the mechanical means of accomplishment are difficult, or

(2) in the class arising from unfair competition between the states, or

(3) in the class of problems arising from some sections of the country or of some groups trying to force their ideas upon other sections or groups by means of centralization of power.

There will always be, of course, a number of border-line cases. Reforms of the first class, where there is agreement of aim, lend themselves to the conference method of solution most easily. The same method may in many cases find ways of overcoming unfair competition by convincing the offending states of the errors of their ways. Again, the conference method, by turning on the light, is very apt to make it evident whether or not the discussed reform is one that had better be left to the states themselves. The borderline cases will be the most difficult to deal with.

The problems of jurisdiction with relation to sources of revenue fundamentally differ but little from other problems of jurisdiction. In many of these problems—as in inheritance taxation—there is no one right solution. If we try to be fair and at the same time practical we are bound to compromise. If through centralization of power we force upon the country the will of either a tyrannical majority or of a powerful and determined and overreaching minority, we are either going to choke the genius of local self-government or we are going to cover up smouldering fires that will eventually destroy our union. Compromise is apt to be best achieved by friendly conference of those interested.

As I have said before, my idea is that what we should be interested in is not just tagging certain sources of revenue as belonging to the Federal Government or the state governments—not in just allotting certain jurisdictions theoretically to one or the other—but that we suggest some intelligent method of attacking such problems, each on its merits, and according to its peculiarities. I have described the method used recently in inheritance taxation. This is not the only way such things can be done. But it looks promising.

AID OF NATIONAL ORGANIZATIONS

It will pay us to note the growth in importance of the Governors' Conference, of the National Tax Association, of the Committee on Uniform State Laws, of the Law Institute, the League of Women Voters and of the legislative committees of such bodies as the American Banker's Association, the American Medical Association, the National Education Association, the National Conference on Social Work, the National Highway Conference and the National Real Estate Association, and other similar bodies.

The Governors' Conference meets every year and gives the state executives a chance for friendly discussions of their public troubles and explanations of their aspirations for their states.

The National Tax Association has an annual conference. It is composed largely of state officials—but also contains all of those enough interested in public finance to attend its meetings.

The Committee on Uniform State Laws is made up of delegates from each state appointed by the governor of the state and works in connection with the American Bar Association. It has accomplished much but its work is little more than started. Much of its work is naturally quite technical in character, *e.g.*, the now generally accepted Negotiable Instruments Act.

The Law Institute, also a child of the American Bar Association, is engaged upon a re-draft of the common law that will tend to bring about state uniformity of interpretation of the common law. The importance of this can hardly be exaggerated.

Recently we had organized a very significant body—the American Legislator's Association. This body is composed of delegates elected by the legislators of each state. It is to meet annually at the same time and place as the American Bar Association. Among other things, it plans to work with the Committee on Uniform State Laws. The first meeting was in Denver this summer. Anyone who has ever served in a legislature has seen the carelessness with which most legislation is prepared for passage. In fact, when one realizes the lack of consideration given to the larger aspects of most bills, it becomes evident what a great influence for good is possible to such an organization as the American Legislator's Association.

I do not predict but I do suggest and hope that out of this wealth of organization may grow a more formal and more powerful body;—a body for conference and compromise—perhaps official, perhaps semi-official—that, working through functional committees much as the Inheritance Tax Committee worked, shall use intelligence and accumulated experience and knowledge in solving these problems of jurisdiction. Such a body would give attention perhaps to general theories but largely as these were necessary to solve specific problems. It would give the states a chance to pass intelligent laws carefully drawn up and openly discussed in friendly conference.

This would preserve to the states the freedom of action that has allowed them to remain a union in spite of widely differing traditions, populations and institutions. It would avoid the destruction of the genius of self-government within the states and would preserve state governments for the time when our population has grown to the point where some sort of integration would be an absolute necessity. And this latter is a very important consideration.

Some people feel that we are already overorganized for Reform with a capital R. Arthur Guiterman has expressed this most ably in a poem entitled

Damming the Missouri

Once a company of Beavers in their engineering fury
Took a notion that their mission was to dam the Big Missouri:
Under Consecrated Leaders they assembled in Convention
For the instant prosecution of their laudable intention.
They were able hard wood biters, they were doughty timber topplers,
And they beavered down the willows and they felled the heavy poplars,
And they laid them to the riffle and were very, very clever,
They were brilliant! Yet the river paid them no regard whatever
But through barrens dry and sandy, or through marshes wet and drippy
Went on flowing, flowing, flowing to the Mighty Mississippi.

When we try to curb the surges of unchanging human nature,
Or to quench a conflagration by an act of legislature,
Or to stem a revolution by the words of quiet thinkers,
Or to hold religion static in a martingale and blinkers,
Or to turn the silent current of continuous creation,
Or to cork the effervescence of a rising generation,
Or to stop the zealous doctors from inventing new diseases,
Or to keep a wife from doing just exactly what she pleases,
We are every bit as crazy, as I'll prove to any jury,
As those enterprising Beavers when they dammed the Big Missouri.

Perhaps this is an age of organization, of over-organization. It is, however, the duty of those of us interested in maintaining our government on the highest plane to work through our own particular organizations for intelligent solutions of vexing problems and not allow this or that body, organized for selfish or emotional propaganda, to stampede legislatures and Congress into a stupidly wholesale centralization of power. I believe we should seriously consider the advisability of working toward some such conferential body as I have suggested. A formal body half way between Congress and the legislatures, a liaison organization capable of collecting data and making dispassionate investigation and recommendations, could be of tremendous value in preventing undue centralization of power and in maintaining the priceless heritage of our present state governments. It would solve our problems by intelligence rather than by propaganda and force.

Federal Co-operation in State Sources of Revenue

By Hon. Mark Graves

Commissioner, New York State Tax Department

USING my own experience in public life and what I have observed therefrom as a guide, the first thought that comes to me in relation to the subject of Federal and state sources of revenue is this: The founders of our government seem to have planned it this way, that things which were of national importance should be functions of the national government; that those which were of state import should be functions of state government, and those which were concerns of localities should be functions of localities. We raise taxes to pay the cost of government, and the cost of government in the aggregate for a specified group of municipalities, whether they be local municipalities or states, or the cost of the national government itself, depends upon the functions which those different governmental units perform.

Professor Seligman has developed the thought that in the past one hundred and fifty years great and powerful forces have been operating in this country, that our country has changed from one where primitive conditions existed to one which is highly developed in an industrial, social and economic sense.[1] The change from primitive conditions to a highly organized state has naturally brought about, first, a multiplication of governmental functions, and second, a shifting of them. At the bottom of the scale, we find local governments exercising functions today which in the beginning were matters of private concern. I refer to charity, education, and a lot of kindred subjects. Things which formerly were of local concern, and therefore local functions, and paid for by the localities, have become state functions, many of them. Some of them have even grown into matters of national importance.

Shifting Process in Government

The point I wish to make is that functions of government are continually and constantly changing and that as they shift and change revenue requirements change with them. The proposal to assign to the Federal Government certain sources of revenue and to the states and their localities other objects of taxation, makes a plausible appeal to one's reasoning. It would be a desirable thing to do if it could be done in such a way that each taxable ability would contribute toward the aggregate cost of government in this country on a relatively equal basis. Frankly, I think the proposal is too idealistic, and I am convinced that it is wholly impractical for a variety of reasons.

The national government should not be limited or restricted in times of war and during periods of payment of war debts. It is just as essential that the Federal Government have the power to marshal the revenue resources of the country in times of national emergency as it is to command the industrial, financial and man power of the country. And when a war ends, it is equally important that the national government have the authority to raise by whatever means is best the revenue necessary to pay the war debt.

The constant shifting of individual

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[1] *See* p. 1.

efforts for the common good to the sphere of governmental activity, and the transition of local functions to the position of state and national concerns, make it impossible to adopt any segregation of sources of revenue either permanently or temporarily for any considerable number of years.

Even though this shifting process did not occur, there is no assurance that yields of revenue from assigned sources would increase in substantially the same proportion as the activities of the different governmental organizations increase.

SECURING ADEQUATE REVENUE

The outlook is that for the next few decades the most difficult problem in government finance will be that of securing adequate revenue for American municipalities. They now have but one main reliance—the tax on property. And they can ill afford to have assigned to the national government for its exclusive use any source of revenue of high productivity, as, for instance, the income tax. It seems clear that in the older states, highly organized industrially and socially, the design must be for the state to take over some of the local functions and finance them, or devise means of raising revenue on a state-wide basis, and then distribute it to the localities.

I think we may agree that a revenue law which can be administered nationally but which cannot be administered by smaller units is a proper source of revenue for the Federal Government; and, conversely, that a revenue law which can be properly administered by local governments but not by the national government should be a source of local revenue.

The Constitution gives, as it should because of the impossibility of administration by states and localities, to the Federal Government the right to lay duties on imports. The direct tax on property, while not specially reserved to the states and their localities, has in actual practice, except in isolated cases, been recognized as a source of state and local revenue, and for practical reasons is not available as a source of national revenue. This, in my opinion, is as it should be. Likewise, the states have generally left the field of indirect taxes on specified articles and luxuries to the Federal Government. And this has undoubtedly been wise procedure.

INCOME AND INHERITANCE TAX FIELD

The two sources of revenue now utilized by the Federal Government and to a considerable extent by state governments are the income taxes on individuals and corporations and the inheritance tax. It seems then that any proposed division of sources of revenue would be likely to revolve around these taxes.

The suggestion has been made that the states abandon to the Federal Government the income tax field and that the Federal Government release to the states the inheritance tax field. I am convinced this would be an unwise and inequitable division. Income as a source of taxation has great revenue-producing possibilities. I am constrained to believe that we may obtain in this country as much or more revenue from this source than we have from the direct tax on property. Except in times of war and in the periods when war debts are being paid, the need of the states and of their localities for revenue is greater than that of the Federal Government. Indications are that local demand will increase at an accelerated rate. If then this great source of revenue is given exclusively to the Federal Government, it is entirely likely to happen that those taxed on this base will be taxed relatively lower than those taxed on their properties for the support of state and local governments.

The inheritance tax has not the revenue-producing possibilities of the income tax. If that field of taxation were abandoned by the Federal Government, the revenue possible to be derived by the states would be inconsequential in comparison with actual needs and requirements.

FEDERAL GOVERNMENT AND ESTATE TAX FIELD

One of the writers in this volume has alluded to the Federal Estate Tax.[2] He takes the position advocated by many others, that the Federal Government should retire from the estate tax field. I agree with Governor Bliss that the states have a higher legal and moral claim to this source of revenue than has the Federal Government, but I differ with him on the desirability of having the Federal Government withdraw. I differ for very practical reasons. We must recognize that in the inheritance or estate tax we have a tax which is levied but once during the lifetime of an individual. We should realize that in this country state inheritance taxation is in a chaotic condition. There is utter lack of uniformity; states have been striving apparently one to outdo the other in their efforts to reach all of the property over which they can claim any right to levy a tax. To remedy that sort of a situation we all agree that intangible personal property of a non-resident decedent should not be taxed; or, to state it conversely, that the decedent's intangible holdings should be taxed only in the state of his residence, meaning the state of his residence at the time of his decease.

Statistics show that about two-thirds of the assets of taxable estates consist of intangible personal property, at least that is what our statistics in New York show. So we have the condition that, if we bring sense into our state inheritance tax statutes, the decedent's estate will be taxed at least in respect of two-thirds of the assets in the State of which he happens to be a resident at the time of his death, without reference as to where he may have lived all the other years of his life, or to what influences he owes the accumulation of his wealth. Many of us believe that the inheritance tax is a good tax; it is found in all democratic countries. It plays a rather prominent part in the social and fiscal plans of all civilized countries. Therefore some of us believe that the Federal Government should remain in the estate tax field in order that we may preserve this very good tax. You may say, "Why is it necessary for the Federal Government to remain in this field in order to preserve this tax?"

Well, I will tell you, very briefly, why, as we see it. A few of our states, Florida, Alabama, Nevada and the District of Columbia, have no inheritance tax statutes of any kind. They offer havens of refuge for people of great wealth; by the simple expedient of taking up their residence there, they can avoid any inheritance tax at the time of death. Keep in mind that this is a tax that is not paid annually, but paid once during a lifetime. A man, after accumulating a vast fortune, might select one of these havens of refuge in his latter years, and thereby avoid all inheritance taxation if the Federal Government should retire from the field.

Now if this is a good tax, if it is desirable that we secure some substantial amount of revenue from this source, we are justified, I believe, in adopting practical methods of preserving it.

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[2] *See* p. 21.

The person who accumulates a fortune or who acquires any substantial amount of property does not do it because of the laws of any particular state; he is enabled to do so by the opportunities which the laws of all of the states and of the national government itself afford him during his lifetime. If we could successfully impose an inheritance tax upon the estate of a non-resident decedent, representing his investment in property within the several states—if that were practical of accomplishment—we might very well say that if the State of Florida does not wish to impose an inheritance tax that is her business and no concern of ours, and is no reason why the Federal Government should remain in the inheritance tax field. But the converse of that is true. If we are to have sensible inheritance tax legislation in this country, we must tax real property, in the state where it is situated, tangible personal property in the state where it has a situs, and all other personal property at the residence of the decedent, at the place where he resides at the time of his decease. It is for these very poorly stated reasons which I have enumerated and others which space does not permit me to state that some of us believe the Federal Government should remain in the inheritance tax field and with the eighty per cent credit provision as now contained in that statute.

Someone may say, as Governor Bliss indicated, that the effect of such a law will be to excite and persuade states to take advantage of the eighty per cent provision. My honest conviction is that if that is done and if that state has no need for the revenue which it receives, it will find, if it surveys its tax system and the tax systems of the local governments within the state, places where taxes may be reduced, and this excess revenue used to take up the slack.

All this talk about the usurpation by the Federal Government of the taxing power of the states, of using a club to force states to have inheritance tax laws, and of state rights in this relation is just plain unadulterated piffle.

The point at issue is: shall we break down inheritance taxation in this country? Active and apparently powerful influences are at work to accomplish that end. They are opposed to this tax for very selfish reasons. They know that if they can bring about the repeal of the Federal estate tax, rivalry and competition between the states will whittle the revenue from this source down to almost nothing. If that could be done without shifting the deficit to the shoulders of already overburdened realty and income (personal and corporate) taxpayers, we would welcome the plan. But when we see that the result would be to place heavier tax loads on the farmer, the home owner, the rent payer and business of every description, we are impelled to voice opposition to the "scheme" and I use that word advisedly. Of course many of those who favor the repeal of the Federal estate are well intentioned. They are carried away by the "states' rights," or some similar argument and are just being used by those who have selfish interests at stake.

PROBLEM OF COMING GENERATION

As I have said, the problem of this and the next generation will be that of financing our local governments. Local governments now receive almost all their revenue from a tax on property—and when I say a tax on property, I mean real property, almost entirely real property. Moreover, as I see the situation, functions of local governments will increase and grow more rapidly in the next generation than will the functions of the state and

Why Federal and State Bases of Taxation Should Be Separate

By Zenas W. Bliss

Chairman of the Rhode Island Board of Tax Commissioners

I SHALL speak from the standpoint of a state tax official, and shall endeavor to indicate some of the difficulties which we now have because the Federal Government and the states are using the same tax bases from which to derive a part of their revenue; and I shall call attention to others which seem to me to be imminent, and which I think will soon be upon us unless proper steps are taken to avoid them.

We are all familiar with the situation with respect to our inheritance and estate taxes. Conflicting jurisdictions, a lack of uniformity in the laws of the several states and the Federal Government, a tendency on the part of some to use this method of taxation for the purpose of influencing the acquisition and determining the distribution of wealth rather than as a measure for raising revenue, and the attempts of others to impose this tax upon all the property that can possibly be reached regardless of the residence of the decedent, the situs of the property, or the equities involved—all these have brought about a situation which leads many of our citizens to regard this old and formerly respectable tax not as a tax at all, but as an added terror to the pangs of dissolution.

The first application of this form of taxation in the United States was by the Federal Government in July, 1798, about eighteen years after its introduction in England. Pennsylvania, twenty-eight years later, or in 1826, was the first state to impose an inheritance tax. The other states followed at varying intervals until practically all of the states imposed some kind of an inheritance or estate tax. I mention these facts merely to call your attention to the circumstance that the Federal Government was first in this field of taxation and was followed by the states.

It is also a fact that the Federal Government abandoned this form of taxation for a considerable period, and, before it seriously reëntered this particular field, inheritance and estate taxation had become an important element in the fiscal policy of many of the states. Inheritance and estate taxation is now highly developed and a very important factor in the revenue systems of a great majority of the states. Under these circumstances it is natural that the states should consider this field of taxation as peculiarly their own, and should look upon Federal activity therein as an encroachment upon their rights. Technically, of course, this view is not correct; there is no question as to the legal or constitutional right of the Federal Government to employ this form of taxation; but as the states have developed this tax in many instances to a high degree, and as the Federal Government had apparently decided to abandon it altogether, or at the most intended to use it only as an emergency measure, there is a certain justice in the claim of the states that this field should be left entirely to them, and in this I heartily concur.

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FEDERAL ADMINISTRATIVE DIFFICULTIES

I have never considered inheritance or estate taxation a proper field for the Federal Government, and so far as I have been able I have always opposed it. There are difficulties of administration which seem to me insuperable, because of our wide geographical extent, the uneven distribution of wealth, and the great dissimilarity in the economic organization and social life of the different sections of our country.

It is by no means an easy matter to frame an inheritance or estate tax law that will give satisfaction even within the comparatively restricted jurisdiction of a state. To formulate a Federal law that will not be unpardonably sectional and at the same time be simple enough to be practical from the standpoint of administration, is extremely difficult.

As an illustration of the difficulty of applying the same law to two widely separated states differing materially in their ecomomic and social organization, I will cite Rhode Island and Mississippi.

In 1916 Rhode Island passed an estate and inheritance tax law. This law has operated with a marked degree of success up to the present time. The amount of revenue raised is adequate. The rates, with two or three minor exceptions, are the lowest, I think, imposed by any of the states, and the exemptions are comparatively high. There has been practically no litigation, and the cost of administration has been low.

This Rhode Island law was copied almost verbatim by Mississippi. The rates were increased somewhat and the exemptions lowered, and there were minor changes made in the officials administering the law, but there was no change in theory or the fundamental principles involved. I have reason to believe that the administration was intelligent and energetic, but the law was a failure in Mississippi. It did not produce sufficient revenue, it was extremely unpopular, there was a great amount of litigation, and the law was finally repealed and replaced by another based upon an entirely different plan, which I understand is working fairly satisfactorily.

It is, of course, necessary to appraise the property of all estates coming under the provisions of the Federal estate tax law. So far as stocks and bonds with a wide market are concerned this is a simple matter, but when real estate, tangible personal property, the securities of close corporations, partnership interests, receivables and similar values are involved, a proper appraisal can be made only by those familiar with the locality and the several classes of property passing, and they must also have a substantial and comprehensive knowledge of business and social conditions in the particular locality in which the property and business happen to be situated.

If these conditions are to be satisfactorily met it will require a very considerable number of appraisers, and their sphere of usefulness will be necessarily limited. It is impracticable to maintain any such corps of appraisers, and consequently the valuations in many instances are bad. Accuracy of valuation must necessarily be sacrificed to economy of administration. Furthermore, if the taxpayer feels himself injured and that it is necessary for his protection to appeal to the courts, he finds litigation very expensive, and it frequently happens that he submits to what he considers a rank injustice rather than meet the cost of such litigation.

I shall not further trouble you with specific objections to the Federal estate tax from the administrative standpoint. It is worth noting, however, that the revenue yield is comparatively small, and it will not seriously deplete the Federal treasury if this source of revenue is abandoned. On the other hand the receipts from estate and inheritance levies form an important part of the revenues of many states, and cannot be foregone without throwing out of adjustment their systems of taxation.

EIGHTY PER CENT CREDIT CLAUSE

In addition to the foregoing there is a much more objectionable feature of the estate tax provision of the Federal Revenue Act of 1926—an unsound, dangerous principle, it seems to me—the eighty per cent credit clause, as it is generally called. This clause provides in substance that the amount of estate and inheritance taxes assessed by and paid to the state may be used by the taxpayer as a deduction against the Federal estate tax up to eighty per cent of the amount of the Federal tax.

The effect of this provision is apparent. Unless the several states adjust their rates to conform to the Federal rates, and thus impose a tax equal to eighty per cent of the tax imposed by the Federal Government, the states will lose the difference between the amount they assess and eighty per cent of the Federal levy, with no resultant saving to the taxpayer. In any event the taxpayer pays an amount at least equal to the amount of the tax assessed by the Federal Government; it is merely a question of distribution. It is immaterial to the taxpayer; his contribution is not affected.

Whatever may be the avowed purpose of this clause, and no matter how sincere its framers and advocates may be in claiming beneficial results to be brought about through interstate comity (and these claims have been justified to a certain extent at least), the fact remains that the states have been coerced or cajoled into altering existing or enacting new laws to protect themselves against, or to take advantage of, the eighty per cent credit clause.

I am very much in favor of interstate comity and uniformity, within limits, in estate and inheritance tax laws, for I believe that many of our present troubles, annoying delays, multiple taxation, excessive combined rates, and the necessity for filing numerous complicated returns, will be very substantially reduced if not entirely eliminated by hearty co-operation between the states. I am convinced that uniformity in principle, uniformity in determining the situs for taxation of the various classes of intangible property and such matters, will be beneficial, but from such experience as I have had and such investigations as I have been able to make I am not convinced that uniformity in rates is either desirable or feasible. The conditions prevailing in the several states are so diverse that if the same rate happened to fit exactly the situation in several widely separated states it would be nothing more or less than a remarkable coincidence.

The Rhode Island law was amended to conform to the Federal rates in order to take advantage of the eighty per cent credit clause. It was necessary to increase the rates in the upper brackets approximately five hundred per cent and it was estimated that the revenue from this source would thus be increased approximately three times. This increase was not needed by the state, and would have thrown our whole revenue system out of adjustment by the imposition of an unnecessarily high capital levy, but we took care of the anticipated increase by providing that all revenue received beyond that which our former rates (with very slight changes) would produce should be set aside for specific purposes. I may say parenthetically that this estimated increase in revenue has not yet appeared. I do not know whether this is due to the fact that the new rates have not been in operation for a sufficient length of time to demonstrate what they will do, whether our calculations were incorrect, or whether our multimillionaires neglect or refuse to die in accordance with our experience tables.

So far as Rhode Island was concerned the purely fiscal consideration involved was not serious. There is, however, what seems to me a very serious aspect to the situation. The Federal Government by the enactment of the eighty per cent credit clause is attempting to regulate local taxation. The provision was apparently very carefully thought out, and without going into details I think the provision is constitutional and enforceable. However that may be, the Federal Government, by means of this eighty per cent clause, in my opinion, employs an agency and inaugurates a policy of intervention in matters of purely local concern that should be opposed by every state in the Union as an encroachment upon, and an unjustifiable and impolitic interference with, local self-government. It seems perfectly apparent to me that this policy, if carried to its logical conclusion, would make state governments practically if not actually impotent to manage their own financial affairs in accordance with the desires of their citizens.

The bad features of the estate and inheritance tax to which I have briefly called your attention—conflict of jurisdiction, use for purposes other than raising revenue, and lack of interstate comity—are not peculiar to estate and inheritance taxes alone. These bad features will be encountered to a similar extent in practically all cases where the conditions are comparable, no matter what kind of a tax is involved. Whenever the Federal Government and the several states tax the same base, or there is an opportunity for two or more states to tax the same thing, there will be a tendency to abuses similar to those which now exist with respect to estate and inheritance taxation.

ROCKS AHEAD

I fully appreciate the dangers of wandering into the domain of prophesy, particularly with respect to taxation, but nevertheless I anticipate that in the not very remote future a number of states will impose income taxes, as some already have; and I also anticipate difficulties of a similar character and quite as serious as those we have experienced with estate and inheritance taxes. Double taxation with respect to all of the income, and multiple taxation with respect to certain classes of income, may easily result in a combined rate sufficiently high to bring about very serious sociological results, undesired by any of the several jurisdictions imposing the taxes. There is always this danger when two independent jurisdictions tax the same base, and of course the danger increases as the number of taxing jurisdictions and the chance for higher combined rates increases. In fact, it seems to me that the possibilities for bad results are considerably greater with respect to income taxation than they have proved in estate and inheritance taxation. We have, however, the great advantage of experience, and we should certainly avail ourselves of it, and by so doing avoid as many of the pitfalls as possible.

I venture to assume, notwithstanding the prominence which the discussion of a certain later amendment has attained, that many of you remember the agitation in favor of the 16th Amendment to our Federal Constitution, and what great stress was laid upon the advantages to be derived from a direct tax upon incomes. Income was the true measure of ability to pay, and ability to pay the best basis upon which to levy a tax. Income was more widely distributed than property, and as the tax was a direct tax, it would fall upon and be felt by many who were heedless of the considerable amount of indirect taxes they were paying, and the result would be, of course, a general interest in the cost of government, and the general public would become aware of extravagance and would demand that it immediately cease. Paying a part of their incomes directly into the Federal treasury would stimulate all to give heed to public affairs, and much good would result from this widespread awakening of the citizens to their civic duties.

Nearly thirty years in the public service has made me somewhat pessimistic with respect to constitutional amendments in general, and this amendment certainly fell very far short of the hopes and expectations of its advocates. Several quite important matters were overlooked, or at least unheeded, and these matters are of particular importance in a consideration of Federal and state sources of revenue.

TENDENCY TOWARD MINORITY TAX

It is well to bear in mind that those exercising the taxing power will not often directly tax themselves, and as the taxing power in this country rests ultimately in the people a tendency to tax a minority, provided of course that the minority has something to tax, is to be expected. The Federal income tax as first applied had a basic exemption of $2000 and other specific exemptions, which resulted in a total exemption to such an amount that the number of taxpayers was by no means enormous. The rates in the upper brackets were high, and a determined effort was made to escape them. The difficulty of reaching all those whose incomes fell within the two lower brackets was very great, and many liable to the tax escaped. The basic exemption has now been raised so that the number of taxpayers has been still further very substantially reduced, and the advantage of a general civic awakening expected to result from the widespread application of a direct tax has not, so far as I am able to perceive, materialized. The high rates in the upper brackets certainly confirmed the opinions of those who were obliged to pay them as to the high cost of government, but I venture to say that they needed no such demonstration to convince them in this regard.

Much taxable wealth is concentrated in more or less restricted areas, and at times there is an apparent concentration when in reality the distribution is wide, as in the case of the main office of a great corporation located in a certain state and its stock held throughout the country. This class of taxable wealth is especially liable to heavy taxation, it is also exposed to the attacks of those of socialistic tendencies, and we find the net incomes of corporations taxed at a high rate. Great aggregations of taxable wealth and large incomes should of course pay their share, and their share is very large, but there is a marked tendency to overdo taxation in this regard. It is one of the most difficult undertakings to convince legislators that increasing the rates of taxation does not necessarily mean a corresponding increase in returns, and that a reduction in rates not only may be advantageous in reducing the pressure on taxable wealth and income but also may, and often does, increase the revenue.

DANGERS OF MATHEMATICAL AVERAGES

It may not be amiss at this point to call your attention to the danger in employing mathematical averages in formulating tax laws and determining the rates of taxation to be applied.

The Federal Government imposes a tax upon the net income of all corporations within its jurisdiction, and, as one would naturally expect, the rate is comparatively high. This tax must be based on a generalization on a very wide scale, the generalization must be based on averages, and the theory of averages applies with more and more accuracy as the number of units upon which the average is based increases. It is also a fact not usually given consideration that the maximum and minimum variation tends to increase as the number of units employed increases. There are a number of such generalizations necessary in determining corporate net income, the allowances for depreciation and replacements, for example, so that while theoretically net income means the same thing for all corporations throughout the country, practically it is not the same thing at all; also the variation from the average is, for the maximum and minimum, great enough to impose a comparatively heavy burden on some and a correspondingly light burden on others. This difficulty is inherent in most if not all direct taxes imposed upon a heterogeneous base covering a wide geographical extent. The only remedy that I am aware of is a multiplicity of exceptions to the general rule which would make administration very difficult if not impractical. Such a tax does not appeal to one as being exactly ideal.

SHIFTING THE BURDEN OF TAXATION

There is a marked tendency observable to transfer the cost of certain governmental activities[1] from one jurisdiction to the one next higher up, from county to state, from state to the Federal Government, on the apparent assumption that the burden of taxation has in some manner been reduced or eliminated entirely in the process. In some instances the burden of taxation, while not reduced or eliminated, as that is obviously impossible, is very positively shifted onto somebody else. This shifting of the tax burden may or may not be, in a broad sense, advantageous. It is conceivable that under certain conditions it may be either very good or very bad. It is well to bear in mind, however, that those who do the shifting are not apt to take an altruistic view of the situation and very likely will be more interested in the immediate advantage to themselves than concerned with the general result. When this shifting is from the state to the Federal Government the Federal Government becomes in a sense a source of state revenue, and judging by the numerous schemes proposed it is apparent that the Federal Government is deemed to be not only a source of revenue but an inexhaustible one as well.

This tends towards centralization, a tendency which needs no encouragement, as it is well known that governmental agencies are inclined to draw unto themselves more and more authority and powers if they can. Centralization is further encouraged by the very simple device of Federal aid on what is commonly termed the fifty-fifty basis. If certain conditions are complied with the Federal Government will, within limits, furnish an amount of funds equal to that appropriated by the state. This may be an entirely proper and sound financial and governmental policy. It is equally true that it may not be. It depends upon the circumstances, two in particular—the source from which the funds are derived and the nature of the project aided.

Some states need aid, some want it and others neither need nor want it. The latter object to furnishing revenue to be expended on Federal aid projects on the so-called fifty-fifty basis, and also object to the Federal Government, through or under cover of the aid rendered, controlling to this extent the expenditure of state funds.

It would be a decidedly discouraging circumstance if there were any desire on the part of the states to withhold Federal aid from any state which really required it. Certainly I know of nothing that would warrant any such conclusion, and I doubt very seriously that any substantial objection would be raised to aid any project if the aid were necessary, or that any state would be captious about the general benefit conferred.

STATE OBJECTIONS

There are a number of states, however, which object to the present method of rendering Federal aid. Some of the reasons advanced are as follows: (1) That the method is extravagant in itself and encourages states to extravagance; (2) that it requires the expenditure of certain state funds under Federal control and to this extent allows Federal jurisdiction over matters of purely local concern; (3) that it encourages the Federal Government to encroach on the constitutional rights of the states, and that under the guise of conferring a benefit the citizens are beguiled into complacency; (4) that due regard is not paid to the nature of the objects aided and that there is a growing tendency to disregard the criterion of general benefit or necessity; (5) and that expenditures of the public funds are made for local enterprises to encourage Federal control. These reasons may not be entirely valid, but there is certainly a very decided feeling in some widely separated sections of the country that there is a real economic danger to be feared as well as an encroachment upon state governmental functions contrary to the spirit if not the letter of our Constitution, if this policy is expanded, or even continued.

IN SUMMARY

I have been able to treat only very briefly a few of the elements involved in the broad subject, "Federal and State Sources of Revenue." I have attempted to show: (1) That there is danger in the use by the Federal Government and the states of the same bases for taxation, because the sum of the rates is very likely to be higher than either jurisdiction would approve, and these combined rates may be sufficiently high to bring about economic and sociological results not intended nor desired by either; (2) that if the same bases are used by both jurisdictions there will be a tendency on the part of the Federal Government either to drive the states out of the field altogether or to control directly, or more probably indirectly as in the case of the estate tax, the states in the conduct of their internal affairs relative to taxation; (3) that bases of taxation requiring appraisals which necessitate very accurate or extensive local knowledge should be avoided by the Federal Government and left to the states; (4) that there is some danger in attempting very broad generalizations based on average conditions because of the wide variations from the average; (5) that the Federal Government should not be used as a source of revenue by the states; (6) and that it is at least somewhat difficult to tax the general public into an understanding of governmental fiscal affairs, or into a proper conception of their civic responsibility.

The Child Labor Question and the Federal Government

By Owen R. Lovejoy

Chairman, Executive Committee, National Child Labor Committee

IT is my understanding that this discussion of the relation of the Federal Government to the problem of child labor is not for the purpose of projecting any specific propaganda at this time, but rather for the purpose of setting forth as a matter of record the issues involved. With this thought in view, let us see just where we stand today.

What are the arguments in favor of Federal action?

What forces have combined to bring us to the present position?

What logically should be the next step in handling the problem of child labor?

I. Arguments For

The advocates of the proposed amendment to the Constitution hold that child labor is a national problem; that a sovereign government should have the power to protect its own children; that our government does not at present possess any such power; that the amendment as passed by Congress and submitted to the state legislators is properly drawn for the purpose of conferring upon the government such power; and that from the standpoint of every consideration of national well-being, from the standpoint of the protection of our country from dangers abroad and from disruption or disintegration at home, from the standpoint of the development of education, health, and other agencies of social service, from the standpoint of the development of our national resources, and from the entire range of our economic and industrial interests, it seems obvious that a government theoretically based on the integrity and intelligence of its citizenship should have power to protect that citizenship in the development of those qualities.

This is the position taken by the advocates of this constitutional amendment. This is what the amendment has meant and still means to them, and, while as a matter of expediency the National Child Labor Committee is not pressing for ratification of the amendment at the present time, we have never wavered in our belief that it is both the right and duty of the United States Government to co-operate with the governments of the various states in providing the maximum protection for the children within our borders. We have never doubted that the fear of those who contend that the principle of this amendment would abrogate the Constitutional Bill of Rights, would destroy the autonomy of our state governments, would imply the control of our educational system, or would give to Congress a power more extensive than that now possessed by every state, is utterly unfounded.

II. Why Disapprobation?

It is the general opinion that the child labor constitutional amendment is dead. While this is technically not the case and we understand any state which has not ratified is still competent to do so, let us waive the point for the purposes of this discussion. Why is the amendment in its present position? I believe it conservative to state that ninety per cent of the legislators in the various states who voted against ratification did so under an entire misapprehension as to the meaning and purpose of the amendment. Possibly these legislators fairly reflected the opinions of their constituents, though a close following of the active campaign lodges grave doubts.

Immediately upon the passage of this amendment by Congress, skillful opposition was organized and a campaign was conducted under shrewd legal leadership and backed by abundant resources, which reached to practically every section of the country. Under the influence of this campaign, the public was given to understand that ratification of the amendment meant any or all of the following things: The nationalization of American children; the dissolution of the forty-eight commonwealths; the breakdown of family discipline and the disorganization of the American home; the forbidding of every farmer's boy under eighteen years to do any chores around the farm, or the farmer's girl to do simple housework; the prevention of any wage-earning to prepare for college; the employment of hundreds of thousands of Federal bureaucrats spending hundreds of millions of the peoples' money to place a government agent in every American home; and—last but not least—the dawn of Socialism, Anarchy, Bolshevism—the linking of the American people to the Soviet Government in Russia.

If the majority of the American people believed that the amendment meant all or any of these things, they were justified in repudiating it with promptness and emphasis. The minority who know anything about it may have been fairly divided, many believing that the Federal Government should co-operate with the states in efforts to protect American children from industrial hazards; others believing that the states on their own initiative should cure these evils by the development of local state machinery and state laws. But this minority of intelligent defenders and intelligent opponents had scarcely any influence in advancing or retarding this tidal wave.

It may be supposed that the promoters and defenders of this amendment have become disheartened by the popular verdict. Not at all! Those of us who have experienced any disheartening have done so on entirely different grounds. Two years ago the public press was full of the discussion of child labor. Everybody who read was compelled to know something about the issue. Whether the information conveyed in the press was accurate or not, the subject was on the front page. The most outspoken opponents of the amendment assured the public on every possible occasion that, while they were opposed to conferring upon the Federal Government the power against which they protested, they were in favor of the eradication of the evils of child labor and wanted to secure for every American child a fair opportunity for health, growth and education.

A SILENT PUBLIC

Today the public press is silent. Public attention is turned in other directions. Debating societies, pulpits and lecture platforms are turning to other topics. The avowed devotion of opponents to this measure has thus far borne no fruit. Perhaps this was not to be expected two years ago, as those familiar with legislative procedure are aware that after time had been consumed in discussing the Federal proposition legislatures were impatient of spending any more time on any phase of the subject, and, therefore, adjourned without any action relating to local conditions. But nearly two years have elapsed. We are now on the eve of another big legislative year. So far as our observation goes, no voice has been raised among the avowed advocates of states' rights and the cure of all evils by state procedure, either to protect all children up to fourteen years of age in their right to schooling, or to regulate the hours and conditions of labor of all children under sixteen, or to exclude youth under eighteen from extra hazardous and dangerous occupations.

We are happy to say that the National Association of Manufacturers, through a committee headed by Mr. Howard Cheney, is making a detailed statistical analysis of the extent and distribution of child employment as revealed by the census of 1920. This is a laudable undertaking and we have assured the Association of our most cordial co-operation in this phase of their enterprise. It should be noted, however, that the census of 1920 is already six years out of date, was in many respects inadequate and misleading when it was issued and was so announced by census officials themselves, and that the public is in definite need of statistical information that shall be both accurate and up-to-date.

A SERIOUS INACCURACY

Meantime, the disheartening phase to which we referred was most blithely expressed in a recent speech by the senior senatorial candidate in New York State, who explained his opposition to the Federal amendment on the ground that all but three states already have child labor laws. Of course in this the Senator was inaccurate. He should have said that every state in the Union has a child labor law. Which would be equivalent to saying that every state in the Union has weather. The effect of this glib sentence is to lull the public to happy and contented slumber. If every state but three has a child labor law, certainly it is assumed that all the children in the country, except those unfortunate enough to live in the three states, are adequately protected; and quite as certainly the citizens of those three states will awaken in the near future and heal the sore so pointedly emphasized by the learned Senator.

This is the sad fact which confronts the enemies of child labor today:—the fact that the public regards the problem as solved, to be filed away like chattel slavery and cannibalism in the ancient archives.

VARYING STATE STANDARDS

In the face of this situation we are impelled to state briefly some of the facts as they exist today. First, as to standards. Second, as to numbers. Third, as to probable trend. To say that every state has a child labor law is one thing. To say that every state has a good child labor law, well administered, is another.

Seven of our states do not require children to attend school after they reach the age of fourteen years. There are nine states in which it is lawful to employ children at fourteen without evidence of ability to read. There are eighteen states that make no provision for determining whether a child is physically fit to be worked before he secures an employment certificate. There are twelve states in which children under sixteen years may legally be worked from nine to eleven hours a day. There are thirty-five states in which children at fourteen may lawfully be worked on scaffolding and around building construction. There are twenty-eight states where children of fourteen are permitted to work in places where explosives are handled or manufactured. There are twenty-two states in which children of fourteen may legally run elevators. Thirty-three of our states permit children of fourteen to be employed on railroads and seventeen states permit children of fourteen to oil, wipe and clean machinery in motion. These are but a few samples to indicate the present status.

Weighed in the balance of human life, human safety, and American citizenship, every one of these specifications against existing state standards is enough to justify arousing the people of the entire country to a militant protest against the cavalier dismissal of the whole subject by the brief statement that all but three states have child labor laws.

NUMBER OF CHILDREN EMPLOYED

Second—as to numbers. We have already stated that on its own authority the census of 1920 acknowledges that the figures are incomplete. They report only the children found at the specific time when the census was taken. They do not purport to report all children. Therefore, the figures I am about to give represent the minimum and not the total.

According to the census report, there are over 76,000 children between ten and thirteen years of age at work. This does not include the special objects of the avowed solicitude of the National Association of Manufacturers, namely, children on home farms. There are more than 144,000 in the twenty-five states that fall below the standard of an eight-hour day, or permit night work for children under sixteen, and this also excludes all clerks in stores and all children working on home farms. In addition to those included in the above number, there are over 12,000 in the seventeen states which permit children of fourteen to oil, wipe and clean machinery in motion, and over 238,000 more in the thirty-six states which do not protect children of sixteen from this dangerous occupation.

The total number of children involved in this failure of the states to protect their own is 553,106. Over half a million of our American children and youth constitute the human side of a problem which is popularly believed now to have been solved.

INCREASING DEMAND FOR CHILD LABOR

Third—as to trend.

A third fact which must be kept in view is the probable increasing demand for the employment of children. Three forces work in this direction.

First, restricted immigration. We believe the temper of the American people is in the direction of still further restriction. This will tend to eliminate from our labor market multitudes of foreigners coming from low-wage countries and countries of low standards of living. Yet our American industries are geared to use this kind of labor. If the illiterate foreigner cannot be mobilized into the industrial army and if the high school educated American refuses to come under the yoke, where shall our industries turn for their labor supply?

The second force is the progressive simplification of industrial machinery. Mechanical processes, once complicated, are now by inventive genius being broken into simpler parts, and processes that formerly required the skill and supervision of a trained worker may now be performed by small hands which can be trained to the job within a few days or a few weeks.

The third force comes from the field of education and we have already become familiar with the cry that so large a percentage of our population is dull, stupid, backward, or feebleminded that to expend money on their public education is a waste both of public funds and the individual's time. If they cannot learn beyond the fourth grade, the fifth grade, or the sixth grade, why not turn them out of school and let them go to work? And this in face of the fact that three to five times as many children leave poor ungraded schools as leave well organized graded schools to go to work. Until we have made an honest attempt to build up our educational system to fit the needs of our children, it is rank hypocrisy to say that they cannot learn. One state reports that while one child in every thirty-five left the ungraded schools to enter illegal employment, only one in 600 left the well graded schools for this purpose.

This is a cheap and easy way of solving a knotty educational problem and by the same process of salving the public conscience.

But it does not solve the problem, as every student of industrial history is aware. To turn an army of young children into industry, to fight barehanded in a competitive battle which becomes fiercer every year, is not only inhuman in the extreme, but destined to destroy the very interests responsible for it. Low paid, low grade labor, the operations of unskilled hands, the fatigue of long hours at exhaustive work, the denial of education to those who do not instantly respond to the fixed mechanism of its present day development—all those are but varying phases of a slow industrial suicide, still more tragic, of social suicide, as the future will most certainly attest.

STEPS TOWARD ERADICATION

Recognizing that this evil exists in the varying forms, and at least to the extent hereinbefore stated, what are the next steps?

As for the National Child Labor Committee, which I have the honor to represent, we continued taking the next steps through the entire amendment campaign, because for over twenty years it has been the fundamental purpose of this Committee to co-operate with the citizens of every state in drafting their own laws and administration. When it became evident that the people of the country would not tolerate any co-operation from the Federal Government, we readily responded that our interest was in the cure of the patient rather than in the kind of medicine to be prescribed. We, therefore, welcomed with eagerness the pledges of individuals and organizations to work immediately for the eradication of such evils as existed within the bounds of their own commonwealth and especially the proffered co-operation of manufacturers' associations to the same end. We have followed this policy, especially for the past eighteen months, with constant and active devotion and find, despite the general apathy which we have discussed, an encouraging number of enlightened citizens in every state ready and willing to assist in bringing their state up to standard.

But, as I indicated in the beginning, the voice of business is significantly silent at the moment and we welcome the opportunity to hear from the recognized spokesman of the most powerful association of manufacturers in America a statement of their position. Because we know that if the Association of Manufacturers so determines, they can wipe industrial child labor from our map in less than two years, we stand, as we have said, for the following minimum standards:

(1) The elimination of all child labor under fourteen years of age.
(2) The limitation of hours for all children under sixteen to eight hours a day, six days a week, and no night work.
(3) The prohibition of children under sixteen from dangerous occupations.

(4) The prohibition of children under eighteen from extra hazardous and dangerous occupations. All these occupations to be carefully analyzed and designated by properly constituted authorities in the various states.

(5) The prohibition of labor of children under sixteen, unless they have had the privilege of at least eight grades of elementary school or the equivalent thereof.

We definitely ask whether or not any of the above specifications are extreme, radical, or unreasonable. If they are conservative and reasonable, we ask active and immediate co-operation in securing their realization in every state of our American commonwealth.

But if the states—if even one of the states—persists in refusing or neglecting to provide adequate protection to the children within its borders, we hold that these children are also children of the United States and that the duty and the right devolve upon our whole people, expressing themselves through our sovereign government, to remove the constitutional limitation by which we are now debarred from affording this protection. For we hold that every child is no more a citizen of the *state* in which he lives than of the *United States* in which he lives, and that the citizens in all parts of our country have a definite stake in the well-being of all children, wholly regardless of the adventitious existence of state boundaries.

Is Child Labor a Government or State Question?

By James A. Emery
Counsel, National Manufacturers' Association

I GATHER that my distinguished friend, Mr. Lovejoy, "the friendly enemy," who has discussed the concrete proposals which he now somewhat vaguely describes as an academic issue on other platforms, is not entirely satisfied with the verdict of the popular jury to which such proposals were submitted.[1] The issue before us is a very large question. It is not only a great social problem, it involves fundamental principles of government. It has been well said here that "the sovereignty should have the power to protect its citizens." We live under a dual form of government. The issue presented here is not whether the sovereign in Federal authority should possess that power, but whether it had better remain where it now is: in the sovereign authority of the respective states, the units through which we preserve self-government and undertake to meet the problems peculiar to locality.

The so-called 20th Amendment—and I hardly venture to describe it by number, because others are liable to seize upon that number if various proposals under discussion are to reach the point of congressional submission to the people—is not an "academic" issue. It is a concrete question. For under our written Constitution we have provided for the submission of an amendment to the organic law, but we have written into the national Constitution no limitation as to the time within which that amendment shall be acted upon. The amendment in question, unlike the Prohibition Amendment, contains no limitation as to the time within which it is to be considered. Those who proposed it rejected every amendment intended to limit the time within which the verdict should be rendered by the jury. Under the discussions of the Supreme Court of the United States, an amendment submitted and otherwise unlimited, remains before the legislators as long as it may be termed a "contemporary" issue. For obviously time may lapse that would make an amendment proposed utterly without contemporaneity.

There have been over 3000 amendments proposed to the Federal Congress during our history and but five of these have been submitted to the states. None of this could be said to be the subject of conclusive rejection, in that by vote of the legislative bodies they had been disposed of beyond reconsideration. Generally they lapsed into the limbo of desuetude. It is interesting and certainly significant that never before in the history of submitted amendments has the answer by the states on the roll-call for ratification been so prompt and so overwhelming. I am not here to measure the value of that verdict. I call your attention to the fact. Now perhaps the reason for the verdict is to be found in the character of the proposal. It is intimated that the facts obtainable from the most authoritative source of information to which we could turn for information upon the character and extent of child labor employment—the Federal Census—are neither complete nor satisfactory. Such information may lack detail, but I think we will perceive upon examination that it is adequate to meet the essentials of the issue; that is, is child labor on the increase or the decline? Is it a serious fact in industry or not? Have the states been so negligent in dealing with the problem as to warrant an unprecedented grant of power to the Congress as the only remedy for the situation? Let us then examine the facts and principles involved, since this is not an academic question but a very concrete one. What is the answer of the popular jury to which the issues were submitted? Why was it so answered? That may throw a flood of light on the subject before us—"Child Labor and Congress."

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[1] *See* page 28.

REACTION OF THE STATES

As the matter stands now, within a year thirty-six states have refused ratification; five have taken no action; two have had no session of the legislature; four have ratified and one of these (Arkansas) has sought to reconsider the action. New Mexico approved the amendment in its assembly but apparently declined further action in the senate. Massachusetts preceded its legislative disapproval by condemnation through a popular advisory referendum of its citizens. I refer to the action of Massachusetts because that state became a great popular forum. Certainly no constitutional question since the Civil War, and probably I ought not to subject my remark to that limitation, was more thoroughly discussed throughout the state than the so-called "Child Labor Amendment."

To say that the popular action was based on misapprehension or misrepresentation of the proposal is to ignore the ample opportunity possessed and employed for the correction of any misstatement or any error of the critics of the amendment. Certainly the action of Massachusetts was not hasty, nor is it a commonwealth given to impetuous and hasty action. Neither the history nor habits of Massachusetts rank it among the immature or rash states of the Union. If, as has been suggested in criticism of the verdict of the Bay State, its electorate acted in "a panic of thought," it is to be observed the panic was aided by such reckless thinkers as the distinguished president of Harvard University, the Catholic Archbishop and Cardinal of Boston, the Episcopal Bishop of Massachusetts, a great body of educators and social workers and an overwhelming majority of the bar and the bench.

If, therefore, the jury was neither in a frame of mind nor by nature qualified to pass upon the problem, where else in the United States are you likely to secure a jury better qualified?

The representative judgment expressed by the legislatures of the country cannot be said to reflect sectional group or class opinion. On the contrary, more states have condemned the proposal in the North than in the South. It was equally unpopular in the West and the East. The disapproval of the industrial states was as pronounced as that of the agricultural communities.

ISSUES INVOLVED

With the topic before us we may properly ask ourselves now, what were the issues which in so brief a period transformed an apparent social sympathy with a cause to antipathy for a proposal? The amendment is simple in its language. It declares that "Congress shall have the power to limit, regulate and prohibit the labor of persons under eighteen years of age." The power of the states is to remain unimpaired save that "the operation of state laws shall be suspended to the extent necessary to give effect to legislation enacted by the Congress."

Now there never has been, never will be, in my opinion, the slightest disagreement among an overwhelming majority of American people as to the necessity of protecting children from injurious employment, and the securing to them of adequate educational opportunity. The popular disapproval of the amendment arose from no lack of sympathy with its avowed purpose. I believe it represented a deliberate rejection of what came to be clearly understood as a revolutionary innovation in Federal authority, supported by assertions with respect to the nature and extent of child employment and exploitation which were found to have slight justification in fact.

We see some evidence of the latter condition in the expressions of one of the most notable and ablest of the proponents of the amendment. When the members of the Senate Committee on the Judiciary were hearing the argument for the proposal, the Senator from Montana, than whom there has been no more determined proponent of the proposal, sharply objected when the Chief of the Children's Bureau listed his state in the second class of commonwealths, as one of those which were lacking in adequate child labor legislation, and denied that there was any occasion to legislate against child employment in the mines of Montana, since there was no record of the employment of children there. We had other instances, of course, where the legislation of particular states like that, notably of Massachusetts, was described as utterly inadequate because it contained no provision within its child labor legislation to prohibit the employment of children within mines, and yet so far as I have been informed by the latest researches on that subject, no mines have been found in Massachusetts.

Now this proposed amendment sought to confer upon the Congress an exclusive and plenary right to control not merely the working life of children, but of every person within the United States under eighteen years of age. It proposed to confer the power to prohibit all such persons from earning a livelihood in any or all forms of employment, or even to engage in any occupation in aid or support of or at the request or direction of their parents or guardians, at any time, or place, and not less at home or within their premises than on their farms or within any establishment.

The power "to prohibit" includes not only the right to exclude from every form of employment, but that larger right to determine the conditions under which any person under eighteen years of age may be permitted to engage in any occupation. It, therefore, necessarily includes not only the power to say what hours such person may work and at what employment, but the wages to be paid and the standards of educational training which must be met before any person under eighteen will be permitted to work at all. That is not Federal control of the school, if you please, but a grant of congressional power to determine those preliminary qualifications or standards without which no person subject to congressional control could earn his own living or contribute to that of those dependent upon him.

Nor is it work alone that is thus subjected to Federal rule. The authority of the regulatory body extends by necessary implication to the control of leisure to such extent as would be necessary to prevent the defeat by subterfuge of any policy which Congress might adopt, for the growth of political authority carries the right to make it effective. It would obviously convey the right of taxation for the support of any under eighteen prohibited from labor, or parents, guardians or other persons dependent upon the aid of such prohibited, which would carry the right to create such boards or commissions, appoint such officials and levy such taxes as in the judgment of Congress were necessary to make its authority effective. Nor is it possible to conceive a Congress exercising the police authority over the subject matter committed to it except through bureaus or commissions or boards or through officials appointed for that purpose and exercising the same powers that we are familiar with in the various boards or commissions through which Congress today enforces regulation throughout the states in matters of health or quarantine. The proposed amendment, therefore, conveys a power in terms and to an extent not now possessed with respect to the same subject matter by any state of the Union.

One of the most common statements made with regard to it was that it was merely conferring upon the Congress a power which the states at present possess. It confers far more than that, for the characteristic local control which the people of a state exercise over their own legislature would obviously disappear. A distant and irresponsible majority unfamiliar with local tradition and circumstances would write the household rule for family life they did not share. Each state would exchange the full authority which they now possess for a two-ninety-six control in the Senate and a small faction among the four hundred and thirty-five members in the House in proportion to the number of representatives possessed by each state.

The loss of protective legal restriction is no less clear. For what is proposed is a plenary grant to the Congress of a police power over the occupational life of all under eighteen free from the constitutional restrictions which surround its present exercise by the states. The power to prohibit women or minors from engaging in particular occupations has long been a recognized part of the police power of the state, but no lawyer of respectability will say that the states may arbitrarily exclude every person under eighteen from all forms of employment. For example, prohibit under penalty such persons from engaging in any agricultural or clerical pursuits. It is no answer to indignantly assert that Congress would never exercise such power, for in the light of experience with what Congress has done when it possessed the power to do it, it expresses a superabundance of confidence in voluntary political restraint. We cannot prophesy how such power will be employed, but a prudent community with a century and a half of experience with the constant necessity for applying the restraints of a written constitution to public action is reluctant to grant to a central government, which could administer its authority only through bureaus and bureaucrats, such unprecented control of intimate, private relations.

NO NEED FOR GOVERNMENT INTERFERENCE

Finally, the facts present no overwhelming necessity which is the ultimate justification for innovation in constitutional government. On the contrary, they demonstrate that local government has neither neglected its child labor problem nor failed in the development of sympathetic public opinion. On the contrary, the 1920 Federal census pictures 1,500,000 more American children between ten and fifteen years of age than ten years before, with 900,000 *less* children *at work* in any occupation than in 1910 and reaches the conclusion, there stated in its own language, that in recent years children have not been an important factor in the total labor situation in non-agricultural pursuits. The only place in the country showing an increase in child labor is the District of Columbia, under the exclusive control of Congress, to whose guardianship it is proposed to wholly submit the children of the entire United States. The child-labor laws of the District of Columbia drafted by the Congress exempt from their operation the children employed by the Senate as pages. Without restriction as to night work, more children under fifteen are employed by Congress than many industrial communities with a population of one hundred thousand.

Under state regulation, the number of employed children radically decreased between 1910 and 1920. It declined from 18.4 per cent of children from ten to fifteen years of age in 1910 to 8.5 per cent in 1920. This decrease is not effected wholly by state legislation, however. By any means it is a rising standard of living that is probably the most important factor. The proportion of children engaged in agricultural pursuits declined from 13.2 per cent in 1910 to 5.2 per cent in 1920, while the children in non-agricultural pursuits declined from 7.5 per cent from all ten to fifteen years to 3.3 per cent in 1920. The rate of progress in Mississippi showed a decline of children's employment from 53 per cent to 29.5 per cent in 1920, while in Massachusetts the decline is from 9.6 per cent in 1910 to 8.6 per cent in 1920.

The South with all its terrific problems to face in connection with its children within the limits of its resources appears to have faced them in most instances with generosity and courage under state control.

The record of what has been accomplished in the states in the regulation of children's employment leads us to the consideration of the more difficult problem of this country. Eighty-nine per cent of ten- to fifteen-year-old children were registered for school in 1920. There were 8.5 per cent said to be at work and 2.5 per cent were unspecified. I pause there for the moment, because it is an easy matter in a discussion of this kind to misinterpret a phrase; thus the term, "gainfully employed," which is the census term upon which all our statistics are predicated would naturally cause you to believe that it represented children "employed for pay" or who were steadily at work, but that is not the fact. It is a census term which includes all who work even for their parents or guardians or after school hours or during vacations. It is only necessary for a youngster to have regular work for half an hour a day to be "gainfully occupied" within the meaning of the census. It is with that meaning attached to the term that you must interpret the information provided by Federal statistics.

But to return to the school condition. The proportion of fourteen- and fifteen-year-old children attending school throughout the period of 1910 to 1920 has increased more than 5 per cent and these are obviously the ages most affected. The trend of this growth was uniform in all the states, only the District of Columbia and five states showing any decline in 1920 over 1910, but the Southern group of states made the most distinct progress. From later figures in the Department of Education, it seems likely the increased school attendance in the last five years may have equaled that of the preceding ten. I have no figures available, but the tendency of the curves of statistics suggest that over 92 per cent of the children ten to fifteen years old may now be in school; figures in regard to high school children show a very rapid rate of increase in numbers there, averaging 1 per cent per year for the past four years, and a total of 8 per cent for the last nine years. Here again a glance at the figures will show a striking contrast in figures. California provides high school opportunities for 30 per cent of the total enrollment in public schools; North Carolina 5 per cent; and Connecticut, a median state, a little more than 13 per cent.

If the object then of Federal control is the removal from manufacture, it is easy to be seen that great progress has been made all over the country. Even in textiles, which employs more children than any other mechanical industry, employment has declined from 10 per cent in 1910 to 5.8 per cent in 1920—a considerable percentage below the ratio in agricultural pursuits. Since about 1920 the mechanical and manufacturing industries have employed less than one half of one per cent of the total children between the ages of ten and fifteen years. It is practically true that they have ceased to be a factor in the labor problem. Industry as a whole has found that it does not want the labor of fourteen-year-old children when less than one half of one per cent of the children in 1920 were found within its ranks by the census. This lesson has been learned under state control of the problem. To a considerable extent, it was accomplished without legislation and under the influence of natural economic and social influences. A further lesson to be learned is the extent to which social and racial questions within the states have affected its progress, as well as the wide variation of economic and occupational conditions.

I want to assure all of you who are interested in this important subject that manufacturers as fathers and as citizens are just as keenly interested in the children of the United States as any other class in the community, whether they look at the problem through the spectacles of their own paternal relation or view it with the sympathetic aspect of a citizen looking at the future of his own country. What the relation of the educational system is to this problem—and that is the most difficult and delicate of all relations—I am not qualified from special study to say. But this must be sure, as Mr. Lovejoy has said, it is for the states to improve their educational system, for that is a great local problem.

The citizen of Massachusetts is not the best judge of how Georgia shall train her children, nor is Georgia the best authority upon the system of public education best suited to Massachusetts. It has been a tradition that the children must, in the first place, through the family, develop the underlying personal qualities upon which the future of our race and country rests. Character is a product of the fireside. Each community is the best judge through co-operation with the parent as to what educational system is best. That cannot be done through a Federal control of education, which has been rejected again and again as a national proposal. It can be done with the co-operation of the Federal Government, and within its own domain the Federal Government has a large control over this problem today.

The public opinion that has refused to grant congressional control of the employment of American youth is resting its judgment on the fact that there is no justification for the demand, and that the national legislature is not fitted for the task of meeting a local problem in terms of local conditions, nor should it be permitted to lessen the local responsibility of the citizen for the greatest of his social duties.

IN CONCLUSION

Let me in conclusion say, lest I be easily misunderstood, that I am not arguing over again the issue so constantly described in the political literature of the past as that of "state rights." "State rights," in the sense that term was originally used, perished in the Civil War. In the sense in which we employ it today, the great commonwealths constituting the American union are the fundamental units of self-government and there can be no good national government unless there is good local government. It is in that sense, if I use the phrase at all, I would talk about "state rights"; rather, would I talk about the thing in which I believe we all join, and that is state "duties."

The duty of local government to protect its citizens in all activities is the first of its great police obligations. Upon it devolves through its educational system the primary duty, next to that of the parent, of providing for the development of the intelligence of its citizens. That is primarily a great question of local responsibility. Now we have been developing the larger phase of this great question. We have unhappily much evidence of a tendency on the part of local government or local citizens to fly to Washington very much like a frightened child to its mother. For the ancient phrase with which we are familiar in the private affairs in life, "let George do it," by which we mean, let the interested public citizen do all the work, and let us enjoy the benefits of it, we have been substituting in many communities the cry "Let Washington do it." Yet, when Washington has undertaken to meet many of the problems, surely those who have watched its operations cannot be impressed with the fact that it discharges police duties more successfully than the states.

Local government is not only the primary school of all good popular government, but local responsibility for the cure of local conditions is the great obligation that must be thrust upon the citizen, if he is to learn in the hard school of experience the great fact that reform at home and within his own community,—the betterment of immediate conditions—is the greatest contribution that any people can make to better government in the nation.

State Versus Federal Regulation of the Labor of Children

By Howell Cheney
Cheney Brothers, South Manchester, Conn.

UNDER state regulation the number of employed children radically decreased between the years 1910 and 1920. It declined from 18.4 per cent of children ten to fifteen years of age in 1910 to 8½ per cent in 1920 (Chart I). This decrease was influenced by state legislation but was by no means entirely due to it. A rising standard of living was a most important factor. The proportion of the ten-to fifteen-year old children in agricultural pursuits, which were affected but little by legislation, declined from 13.2 per cent in 1910 to 5.2 per cent in 1920; while the children in non-agricultural pursuits, against whom legislation was mainly directed, declined from 7.1 per cent of all ten-to fifteen-year old children in 1910 to 3.3 per cent in 1920 (Chart I).

Though the positive points attained were not as low in the South, where there was little legislation, the rate of progress was far more rapid than in the North. For instance, in Mississippi the proportion of ten-to fifteen-year old children employed declined from 53.4 per cent in 1910 to 25.5 per cent in 1920 (Chart II); while in Massachusetts, which represents the median state, the decline was from 9.6 per cent in 1910 to 8.6 per cent in 1920. The District of Columbia under Federal control was the only jurisdiction in the country in which the ratio of employed children was greater in 1920 than in 1910, by even a small amount. The South has had terrific problems to face in connection with its children, but within the limit of its resources appears to have faced them in many instances both generously and courageously under state control (Chart II).

If the object of Federal regulation is the removal of children from the mechanical and manufacturing industries, it is easily demonstrable both that great progress has been made in all sections of the country, and particularly in such industrial states as Pennsylvania, Ohio, Illinois, Michigan and New York. Even in the textile industry, which employs more children than any other mechanical industry, the ratio of ten-to fifteen-year olds to total operatives had declined from 10 per cent in 1910 to 5.8 per cent in 1920 (Charts I and III), or below the ratio in agriculture. Since by 1920 the mechanical and manufacturing industries employed less than 1½ per cent (Chart III) of the total children ten to fifteen years of age, it is practically true that they had ceased to be a factor in the labor problem of industry. Industry as a whole had found conclusively that it could prosper without the labor of children under fourteen years of age, when less than one-half of one per cent of the children under fourteen years of age were found in 1920 by the census enumerations within its ranks. This lesson had been learned under state control. To a very considerable but immeasurable degree, as has been shown, it was accomplished under the influence of natural economic and social laws.

The further lesson to be learned from a statistical study of this development by states is the extent to which the social and race questions within the states have affected its progress, as well as the wide variation in economic and occupational conditions.

DIVERSITY OF PROBLEM

The record of what has been accomplished under state control in the eliminating of children from employment leads us to a consideration of a more difficult problem which *has* grown out of this social and economic development.

Eighty-nine per cent of the ten-to fifteen-year old children were registered as in school in the year 1920 (Chart IV), 8½ per cent were at work, and 2½ per cent were unspecified. The proportion of fourteen- and fifteen-year old pupils attending school (Chart V) had increased 5 per cent in 1920 over 1910. These ages were obviously the ages most affected. The trend of this growth was remarkably uniform in all of the states, only the District of Columbia and five states showing any decline in 1920 over 1910. But the Southern group of states made the most distinct progress (Chart V). From later figures from the Department of Education it seems likely that the increased school attendance in the past five years may have nearly equalled that in the preceding ten years. The tendency of the chart curves would suggest that over 92 per cent of the children ten to fifteen years of age may now be in school. Figures in regard to high schools (Chart VI) show the very rapid growth in numbers here, averaging 1 per cent a year for the last four years, and a total of 8 per cent for the last nine years. Here again a glance at the chart shows the striking variation between the different states in their provision for the older children. California provided high school opportunities for 30.2 per cent of the total enrollment of pupils in public school, North Carolina for 5.1 per cent, and Connecticut, the median state, for 13.8 per cent.

The character and size of the increased burdens which have been placed upon the body politic by the elimination of the children from occupations and their addition to the school system illustrates how absolutely interdependent are these two problems. Just as in any one family what was yesterday a problem of education becomes tomorrow a problem of employment, or vice versa; so in a community or a state the question of increased education becomes immediately a question of increased resources in wealth, in teachers, in buildings, and in educational material.

There were in 1924 in our schools 6,475,000 more children than there were in 1910, and at least 2,710,000 more than were in 1920. At the same rate of increase another 1,354,000 have been added in the last two years, making over 4,000,000 since 1920. The influences which have either retained them there or kept them out of employment are by no means simple. The most potent are perhaps the rising standards of living and of social values. Legal regulation has contributed. Under legal regulation the deficient and defective are not eliminated when they reach the working age. At the other end of the scale, there has been an immense extension of high school courses and an immense increase in the high school registration. Finally, all through the eight years of elementary course and four years of high school course, the curriculum has been extended and enriched. Communities have been lavish sometimes to the extreme in their appropriations for new school buildings. There is a slowly increasing public recognition of the necessity of better teachers and better paid teachers. But each one of these influences (it is sometimes difficult to separate them in their effects) has a definite bearing upon the tax budget and the available resources. It is practically impossible therefore to approach the subject of the regulation of the labor of children without considering its effect upon the alternatives in opportunities which it offers, and their bearing upon the ability of the state to assume the increased burdens.

PER CAPITA COST

The cost of public education per capita of total population has advanced in the United States from $2.84 in 1900 to $4.64 in 1910, $9.80 in 1920 and $16.25 in 1924. Even allowing for the decreased purchasing power of the dollar and using index number 160 as an equalizing factor, the 1924 figures show an increase of three and one-half times over the 1910 standard (Chart VII). Here again there are the widest differences by states. California is now paying $31.75 per capita of population for educational purposes, and Arkansas $5.15. The Southern states as a rule are of course far less able to support this educational advancement than are the Northern, Western and the Eastern states.

There are many surprises in this list. Connecticut, for instance, which we think of as a wealthy state, is only on the median line. Rhode Island, New Hampshire, Maine and Vermont are considerably below the median line; while such agricultural states as California, Nevada, Wyoming, North and South Dakota, head the list; and two states, Idaho and Montana, are spending less in 1924 per capita than they spent in 1920, though Idaho of all the states made the most rapid advance in 1920 over 1910.

The striking differences between the states is even more broadly illustrated when we endeavor to compare the proportion of per capita wealth which is devoted to education in each state relative to what it considered its other necessities. We find, for instance, that in 1924 the positive per capita expenditure for education in Nevada was second in the list with an expenditure of $27.28 per capita of population (Chart VII). Out of every thousand dollars, however, of relative per capita wealth or total resources in 1922 (Chart VIII), Nevada spends but $3.09 for education against a maximum of $7.70 in Oklahoma. North Carolina is the median state, expending for education $4.89 out of every thousand dollars of relative per capita wealth. This table does not by any means show the variation between the two means that the former table of positive per capita expenditures for education did, and indicates that there is much more definite correlation between the cost of education and the relative per capita resources or total wealth of the community than there is between the cost of education and the direct per capita expenditures for education. This, of course, is only a demonstration that the existence of resources does not so definitely determine the amount which a state can spend on its educational system as does the actual distribution of its budget between its total demands (Chart VII). Tested by either method, however, the Southern states have a far more difficult burden to carry than have the Northern and Western states.

Chart VIII illustrates an endeavor to find the correlation between the estimated *wealth* per capita of each state, and the state's *expenditures* per capita of total population for education, and the state's *expenditures* for education per capita of population of school age, five to seventeen years of age inclusive. The latter seems to furnish the highest degree of correlation of any of the three factors; but a glance at this chart, however, will show in a most graphic way the difficulty of the individual states to adapt themselves to any common measure in the distribution of their resources. The average per capita wealth of the United States is $2,918.00. The average expenditure per capita for education is $14.47, and the average expenditures per capita of population five to seventeen years of age is $55.22. Here again the Northwestern and agricultural states show that they are most easily carrying the burden, and that the Southern states have an infinitely more difficult problem to face and must do so with the realization that the opportunities open to children will differ very materially as between states. It might be argued that the logical cure for this situation is to treat the country as one unit and to distribute its entire resources without regard to present taxing units or legal jurisdictions. This, of course, would simply mean wiping out our state theories, traditions, community controls of education, and ideals of self-government.

STATE ACHIEVEMENTS

As against this we find the history of numerical achievement of the last ten years by no means discouraging, and that the states have in their own ways and within their own resources made tremendous strides. Let us, for instance, take the condition of illiteracy of the uvenile population ten to fifteen years of age (Chart IX). In Louisiana 24½ per cent of the children ten to fifteen years of age were illiterate in 1910; 14.1 per cent in 1920. In all of the Southern states, to which the problem of illiterates among children of school age is largely confined, progress has been equally encouraging. This chart further illustrates how this is a problem of the negro and what is known as the "poor white" population, and that it is confined practically to the Southern states. In only fourteen states of the Union is the percentage of illiterates to total number of children ten to fifteen years of age in excess of 2 per cent in 1920, and in the whole Southern group the average has been cut down from just under 10 per cent in 1910 to 5.7 per cent in 1920 (Chart IX).

The high school attendance in the Southern states, while the rate of increase is not as high as in the North, shows a decided tendency towards improvement, greater perhaps in view of the resources available than in the North (Chart VI). The increases in the proportion of population in school attendance fourteen to fifteen years of age (Chart V) also shows a greater degree of improvement in the Southern than in the Northern states. The length of the school term as fixed by legal enactment and also the days that the schools are in session compare quite favorably in the Southern states with those in the Northern states. Here again, considering the resources that are available, the results are measurably better (Chart VIII).

As a New England man, therefore, I am obliged to confess that I find the Southern states, measured by their resources available, have met their educational responsibilities rather more generously than have the Northern and Eastern states. They have done this under state control.

So far as progress is measured by mere numbers under some form of education, or by dollars spent, or by the ratio of expenditures to population, or by the days and hours under instruction, the evidences of advancement are at hand. They show at least on the numerical basis no lack of state pride or determination in shouldering the rapidly increasing educational responsibilities, which have been committed to them as guardians of the labor of children, and as instructors of their minds and bodies. No Federal direction or even supervision could have gone as far in trying to adapt local resources to a great onward sweep.

FROM THE SCHOOL ANGLE

When we endeavor to measure the results of these reforms we get an even more pronounced picture of the difficulties involved; of the inseparable relationship between the labor and the education of juniors. In trying to escape from one horn of a dilemma we have impaled large numbers of children upon another horn. If it is true that large numbers of children were protected from the exploitation of industry, it is more than true that many were exposed to the suffocation of education under a system which was either far beyond their abilities, or incapable of adapting itself to the size of the task imposed upon it.

Chart X illustrates the mortality which the public school system suffers in its efforts to carry its load along at a normal rate. To make this clear, the United States Bureau of Education has ascertained the per cent of pupils surviving to each grade out of a total of over 7,800,000 pupils who started in the two classes of 1911 and 1913. Out of the class of 1911 but 8.8 per cent survived to high school graduation, which is perhaps not surprising. The class of 1913 did better with a survival of 11.7 per cent. The surprising thing, however, is that but 63 per cent were promoted at the end of the first year. From there the losses were continuous, but gradually increased until they were more rapidly accelerated in the fifth to seventh grades, or until release from school came. By the end of the fifth grade nearly half of them, or 46.7 per cent, had fallen behind, and by the end of the seventh grade only three-eighths were in the normal line of promotion.

Chart XI gives the same picture from another angle. It illustrates the distribution of pupils by grades by ages—the great loss through a poor start in the first year; the more gradual falling behind until the acceleration is increased by reaching the limits of mental ability towards the fourth and fifth grades. Chart XII helps even more definitely to realize the extent of this loss in wasted years, and to analyze it into the proportion that are retarded for from one to five years. It is quite clear that in the average, approximately 30 per cent of the children leaving from the fifth, sixth and seventh grades have lost one or more years, and out of this 30 per cent approximately 58 per cent have lost or wasted one year, 28 per cent two years, 10 per cent three years, and 4 per cent four or more years, before a release from the accumulating failure in school comes to them. The average loss of time for the whole group of elementary pupils up to the end of the sixth grade was over one and a half years.

For that smaller portion of the group who went to work as soon as the law permits it may reasonably be shown that by and large throughout the country they have wasted at least two years of their lives as far as making mental progress goes. For two years they have been dulled in failure at tasks they were either incapable of performing, or that the school was incapable of presenting to them. In other words, this means that as regards a very large group of pupils state regulation of labor had gone far in advance either of the mental ability of the pupils most concerned, or of the available resources in money, teachers and ideals to meet the situation. Could it by any possibility be argued that if under Federal control the regulations had been advanced, the suffocation and retardation and wasted years would have been less? The plea for Federal control found justification in the minds of its proponents only in advanced standards. If they admitted that the standards were as high as available resources, both financial and ideal, permitted, they had lost their case before the argument was begun.

In Conclusion

I would refer you to the investigations of two professional educators, both of them women: Dr. Helen T. Wooley of Cincinnati, whose investigations were inspired in part by the National Child Labor Committee, and Dr. Anna Y. Reed, Professor of Personnel Administration of New York University, whose work has been supported through the Junior Personnel Service. These women have devoted themselves to the problem of finding out why educational achievements have not kept pace with the army of nearly eight million pupils who have been added as new pupils to our educational ranks during the last sixteen years. Their conclusions, of which Mrs. Reeds' are not yet published, are practically in agreement as to the following:

(1) That mental ability is the major factor both in retardation in school and in elimination from school.

(2) That economic pressure or poverty was of far less importance, either in removing children from school or in forcing them into employment.

(3) That among the children who were retarded, those who left school to go to work have advanced rather more rapidly mentally and physically than those who had stayed in school.

(4) That industry was not in itself a cause for delinquency, or of either mental or physical degeneration. Moral delinquency they traced much more definitely to home and school environments and to the habits of failure and discontent incident to being forced to continue tasks at school which they were incapable of mastering.

(5) That there was slight, if any, correlation between school grade attained and wages earned; that the "collar and cuff" and clerical jobs did not pay as much as manual work; that the slogan, "Education Pays," was a myth except where increased education was related to ascending grades of mental ability.

Mrs. Woolley still believes that ultimately the schools may be able to meet the task imposed upon them, but both women recognize that education is not a commodity which can be transferred to millions of children under fiat of law without respect to their mental ability and without respect to the resources available for the undertaking. Nothing has done so much to clear away some of the fogs and sentiments which have hung about the child labor and educational problem as have the researches of these two individuals. Both finally come to the conclusion that advanced education cannot be a question of mass education. It must be a question of individual capacities and abilities. Both investigations also clearly show the intimate interdependence of the principles of exclusion from labor and ultimate education. The principle of Federal control purposes to divorce these complimentary opportunities for children. It proposes to give to the Federal control the power to impose by fiat of law the definition of the opportunity to labor. It proposes to leave to the individual state the solution of the problems arising out of this fiat. The undertaking is bound to fail quite as much in the state of California as in that of Mississippi, and the results would be quite as unfortunate to Massachusetts as they would to Alabama.

Chart I

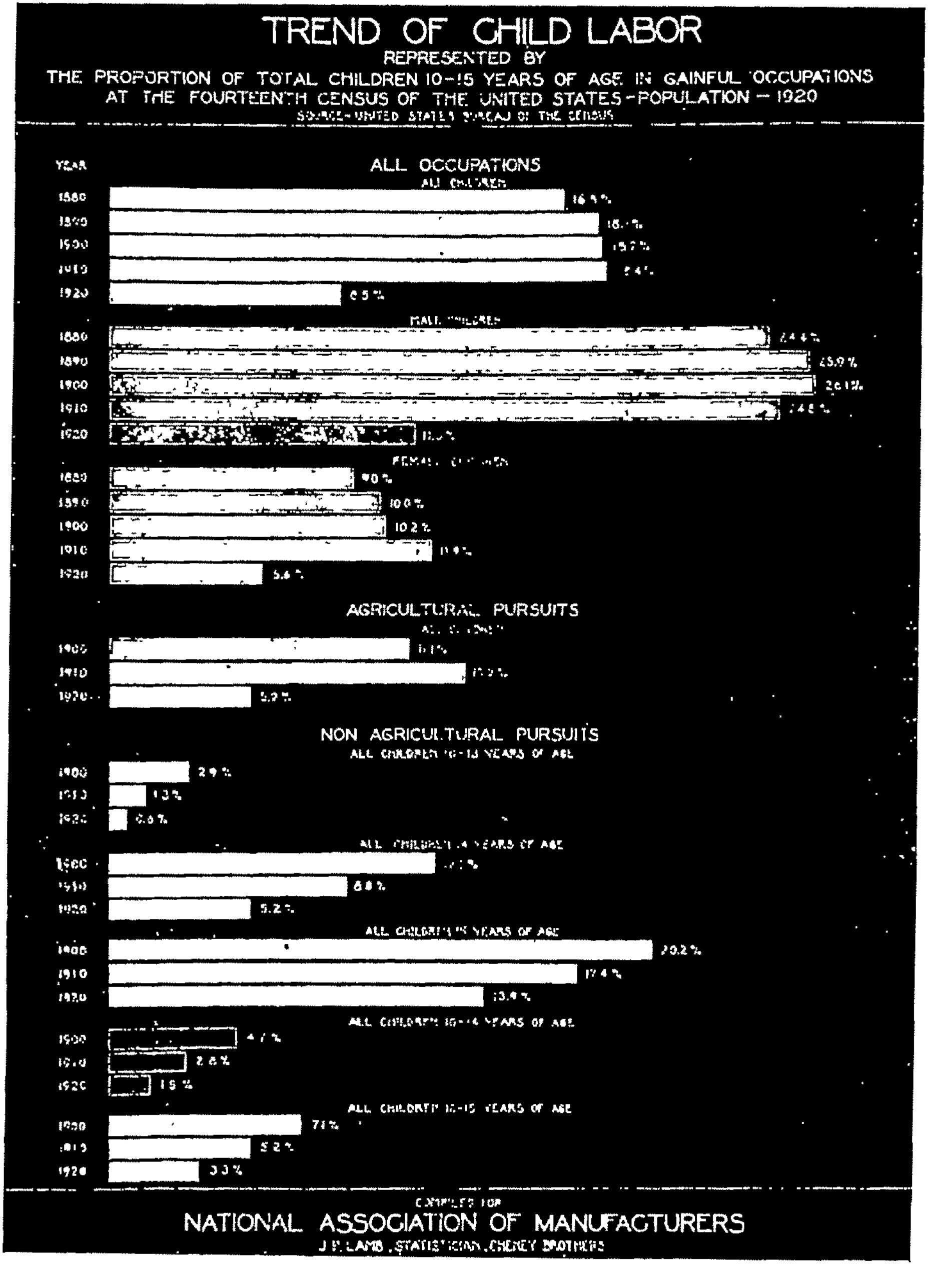

TREND OF CHILD LABOR
REPRESENTED BY
THE PROPORTION OF TOTAL CHILDREN 10-15 YEARS OF AGE IN GAINFUL OCCUPATIONS
AT THE FOURTEENTH CENSUS OF THE UNITED STATES-POPULATION-1920
SOURCE-UNITED STATES BUREAU OF THE CENSUS
YEAR
ALL OCCUPATIONS
ALL CHILDREN
1880 16.8 %
1890 18.1 %
1900 18.2 %
1910 18.4 %
1920 8.5 %
MALE CHILDREN
1880 24.4 %
1890 25.9 %
1900 26.1 %
1910 24.8 %
1920 11.3 %
FEMALE CHILDREN
1880 9.0 %
1890 10.0 %
1900 10.2 %
1910 11.9 %
1920 5.6 %
AGRICULTURAL PURSUITS
ALL CHILDREN
1900 11.1 %
1910 13.1 %
1920 5.2 %
NON AGRICULTURAL PURSUITS
ALL CHILDREN 10-13 YEARS OF AGE
1900 2.9 %
1910 1.3 %
1920 0.6 %
ALL CHILDREN 14 YEARS OF AGE
1900 12.0 %
1910 8.8 %
1920 5.2 %
ALL CHILDREN 15 YEARS OF AGE
1900 20.2 %
1910 17.4 %
1920 13.9 %
ALL CHILDREN 10-14 YEARS OF AGE
1900 4.7 %
1910 2.6 %
1920 1.5 %
ALL CHILDREN 10-15 YEARS OF AGE
1900 7.1 %
1910 5.2 %
1920 3.3 %
COMPILED FOR
NATIONAL ASSOCIATION OF MANUFACTURERS
J. P. LAMB, STATISTICIAN, CHENEY BROTHERS

CHART II

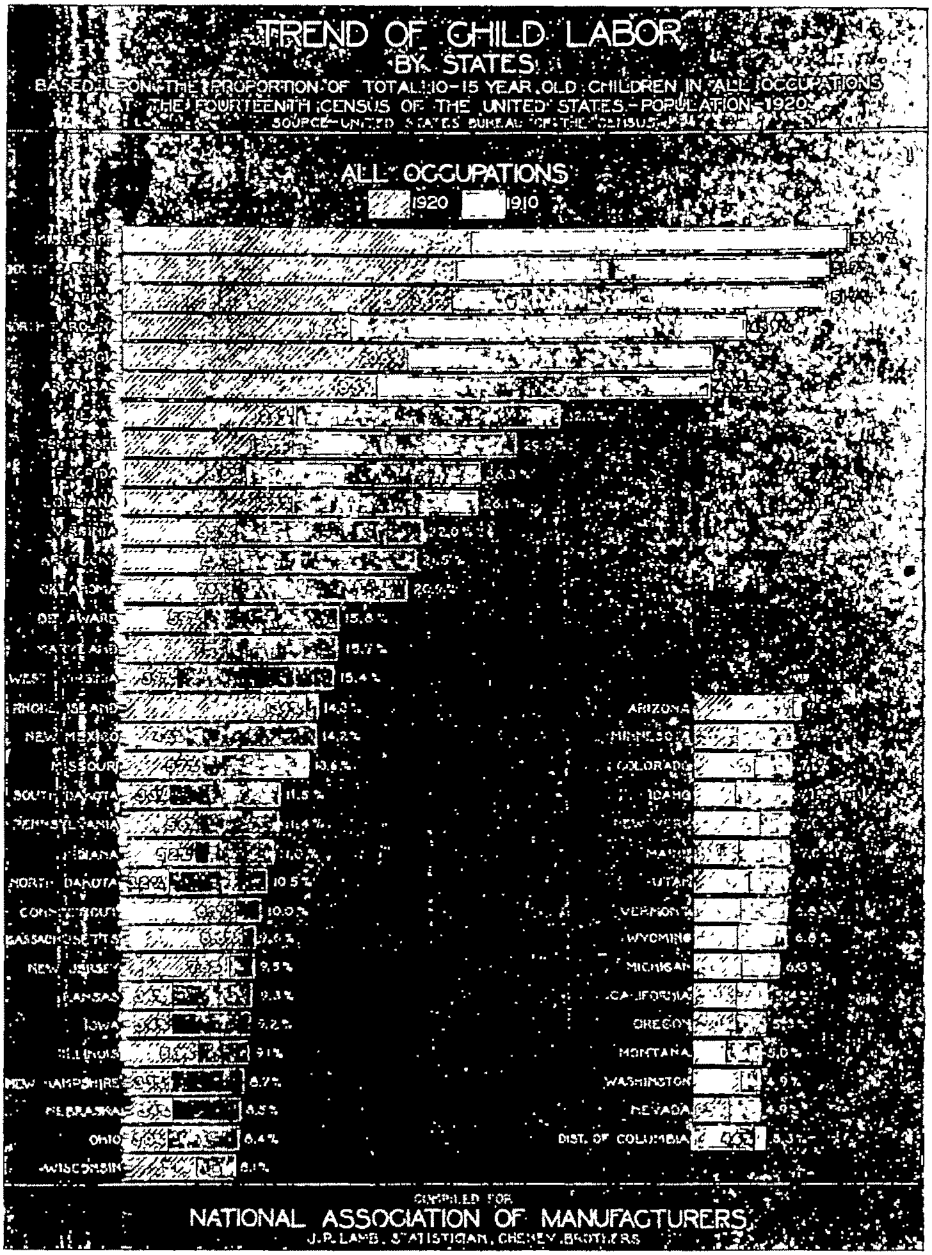
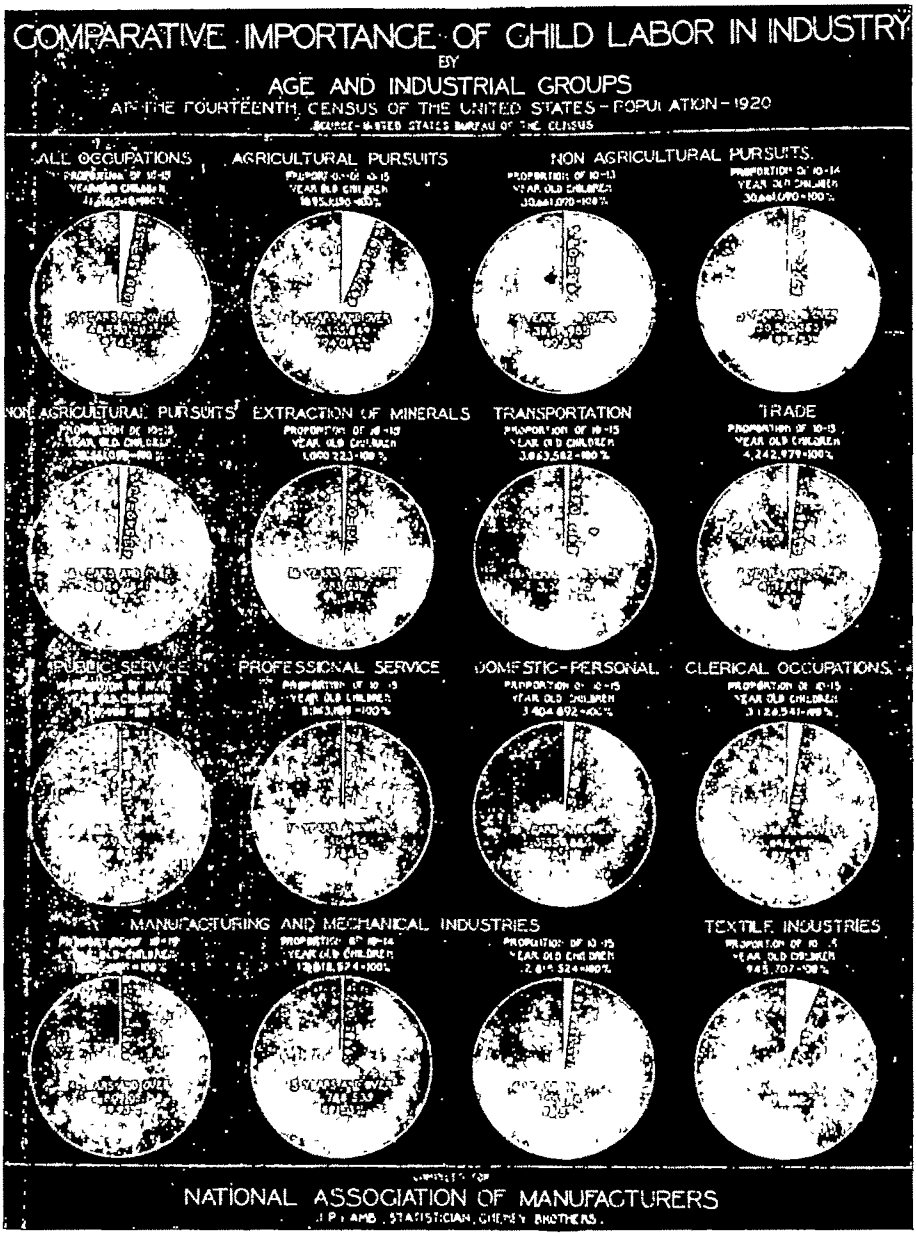

TREND OF CHILD LABOR
BY STATES
BASED UPON THE PROPORTION OF TOTAL 10-15 YEAR OLD CHILDREN IN ALL OCCUPATIONS
AT THE FOURTEENTH CENSUS OF THE UNITED STATES - POPULATION - 1920
SOURCE - UNITED STATES BUREAU OF THE CENSUS
ALL OCCUPATIONS
1920
1910
MISSISSIPPI
SOUTH CAROLINA
ALABAMA
NORTH CAROLINA
GEORGIA
ARKANSAS
TEXAS
TENNESSEE
FLORIDA
LOUISIANA
VIRGINIA
22.0%
KENTUCKY
21.5%
OKLAHOMA
DELAWARE
15.8%
MARYLAND
15.7%
WEST VIRGINIA
15.4%
RHODE ISLAND
14.3%
NEW MEXICO
14.2%
MISSOURI
SOUTH DAKOTA
11.5%
PENNSYLVANIA
11.4%
INDIANA
11.0%
NORTH DAKOTA
10.5%
CONNECTICUT
10.0%
MASSACHUSETTS
9.6%
NEW JERSEY
9.5%
KANSAS
9.3%
IOWA
9.2%
ILLINOIS
9.1%
NEW HAMPSHIRE
8.7%
NEBRASKA
8.5%
OHIO
8.4%
WISCONSIN
8.1%
ARIZONA
MINNESOTA
COLORADO
IDAHO
NEW YORK
MAINE
UTAH
VERMONT
WYOMING
6.6%
MICHIGAN
CALIFORNIA
OREGON
MONTANA
5.0%
WASHINGTON
4.9%
NEVADA
DIST. OF COLUMBIA
COMPILED FOR
NATIONAL ASSOCIATION OF MANUFACTURERS
J.P. LAMB, STATISTICIAN, CHENEY BROTHERS

Chart III


COMPARATIVE IMPORTANCE OF CHILD LABOR IN INDUSTRY
BY
AGE AND INDUSTRIAL GROUPS
AT THE FOURTEENTH CENSUS OF THE UNITED STATES - POPULATION - 1920
SOURCE - UNITED STATES BUREAU OF THE CENSUS
ALL OCCUPATIONS
AGRICULTURAL PURSUITS
NON AGRICULTURAL PURSUITS.
PROPORTION OF 10-13 YEAR OLD CHILDREN 30,441,070 - 100%
PROPORTION OF 10-14 YEAR OLD CHILDREN 30,441,070 - 100%
NON AGRICULTURAL PURSUITS
EXTRACTION OF MINERALS
PROPORTION OF 10-15 YEAR OLD CHILDREN 1,090,223 - 100%
TRANSPORTATION
PROPORTION OF 10-15 YEAR OLD CHILDREN 3,063,582 - 100%
TRADE
PROPORTION OF 10-15 YEAR OLD CHILDREN 4,242,979 - 100%
16 YEARS AND OVER
PUBLIC SERVICE
PROFESSIONAL SERVICE
DOMESTIC - PERSONAL
PROPORTION OF 10-15 YEAR OLD CHILDREN 3,404,892 - 100%
CLERICAL OCCUPATIONS.
PROPORTION OF 10-15 YEAR OLD CHILDREN 3,126,541 - 100%
MANUFACTURING AND MECHANICAL INDUSTRIES
PROPORTION OF 10-14 YEAR OLD CHILDREN 12,818,524 - 100%
PROPORTION OF 10-15 YEAR OLD CHILDREN 12,818,524 - 100%
TEXTILE INDUSTRIES
PROPORTION OF 10-15 YEAR OLD CHILDREN 945,707 - 100%
COMPILED FOR
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J. P. LAMB, STATISTICIAN, CHENEY BROTHERS.

CHART IV

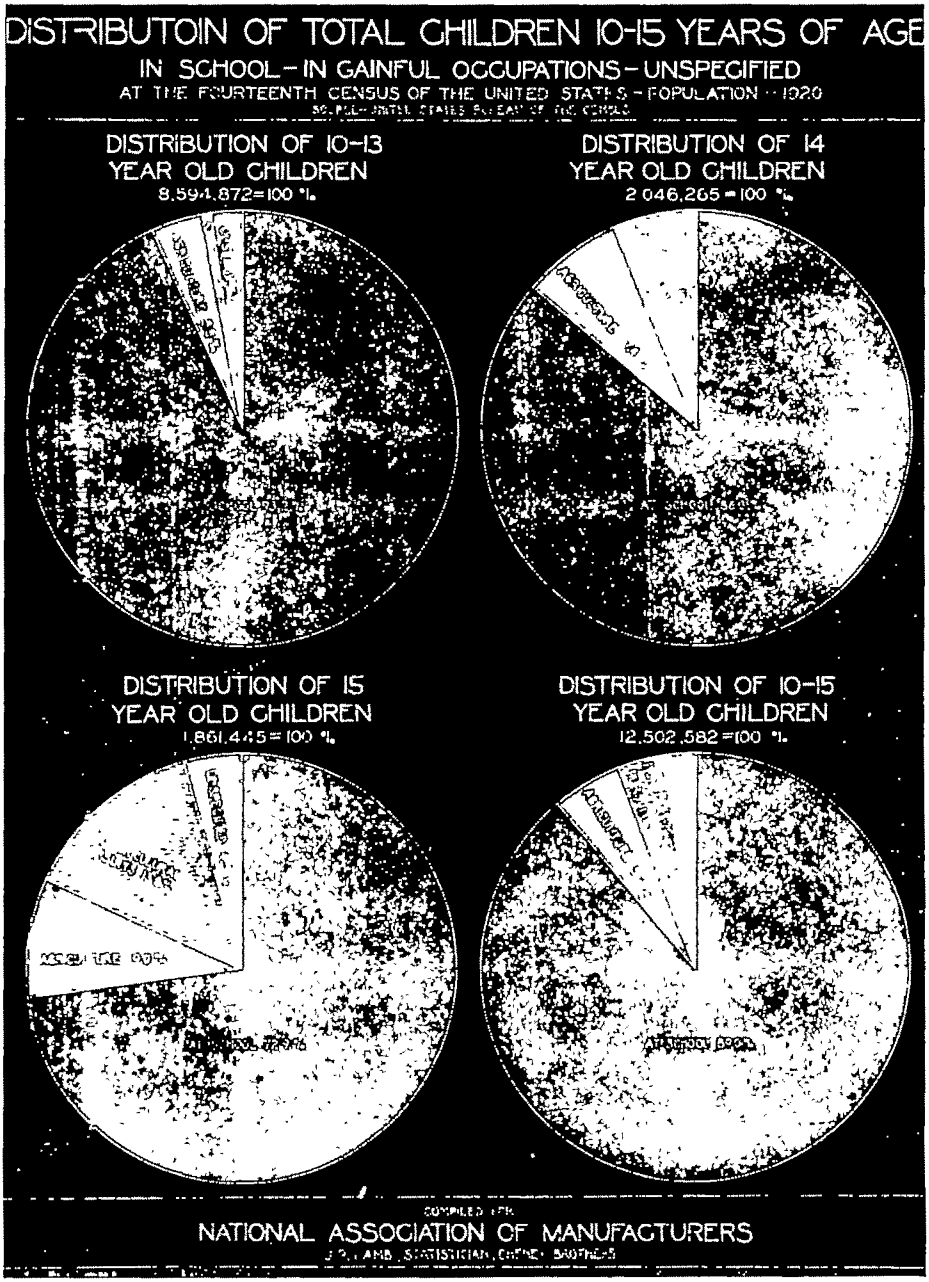

DISTRIBUTOIN OF TOTAL CHILDREN 10-15 YEARS OF AGE
IN SCHOOL – IN GAINFUL OCCUPATIONS – UNSPECIFIED
AT THE FOURTEENTH CENSUS OF THE UNITED STATES – POPULATION – 1920
SOURCE – UNITED STATES BUREAU OF THE CENSUS
DISTRIBUTION OF 10-13 YEAR OLD CHILDREN
8,594,872 = 100 %
DISTRIBUTION OF 14 YEAR OLD CHILDREN
2,046,265 = 100 %
AT SCHOOL
DISTRIBUTION OF 15 YEAR OLD CHILDREN
1,861,445 = 100 %
AT SCHOOL
DISTRIBUTION OF 10-15 YEAR OLD CHILDREN
12,502,582 = 100 %
AT SCHOOL
COMPILED FOR
NATIONAL ASSOCIATION OF MANUFACTURERS
J. R. LAMB, STATISTICIAN, CHENEY BROTHERS

CHART V

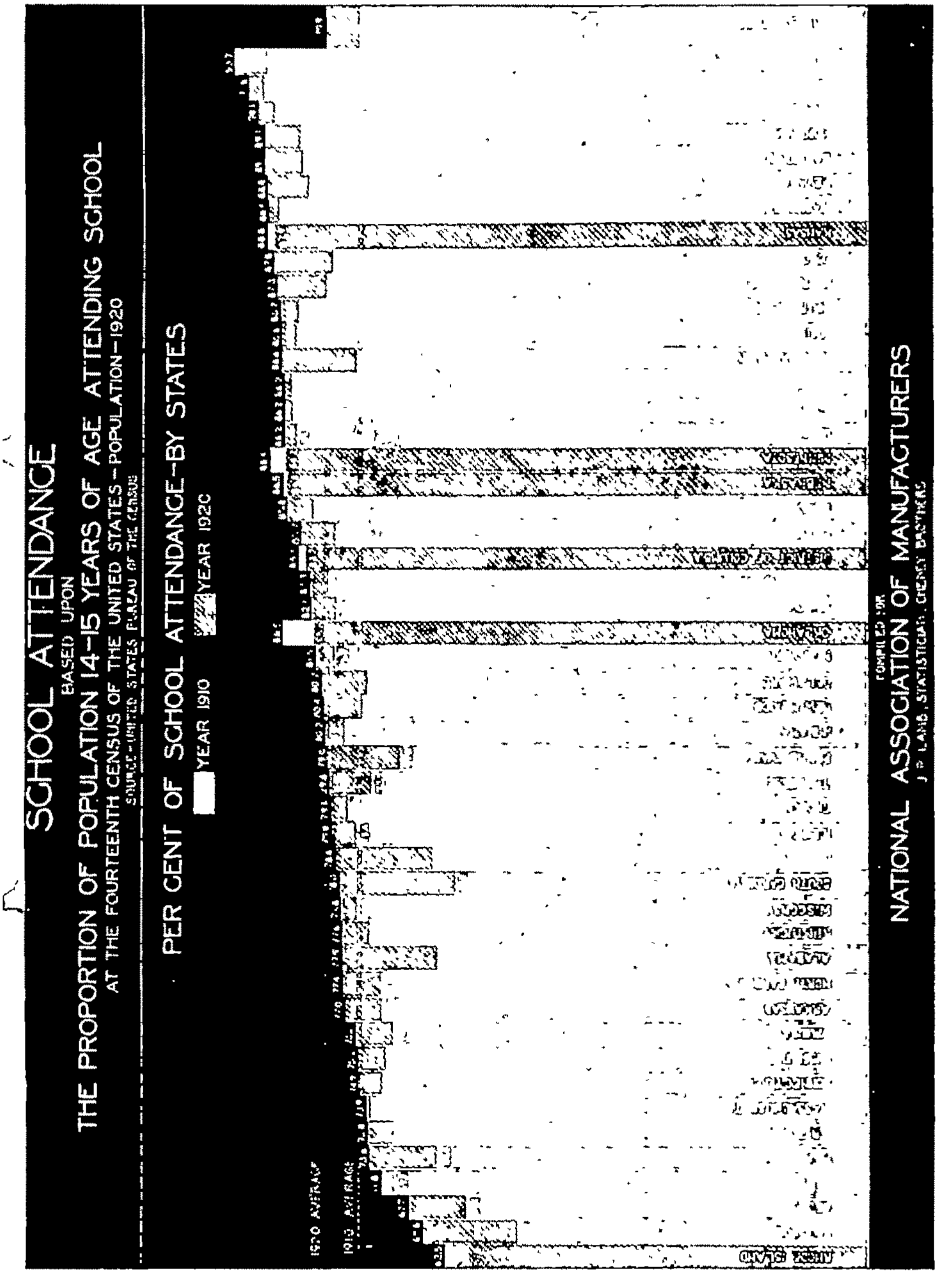

SCHOOL ATTENDANCE
BASED UPON
THE PROPORTION OF POPULATION 14–15 YEARS OF AGE ATTENDING SCHOOL
AT THE FOURTEENTH CENSUS OF THE UNITED STATES – POPULATION – 1920
SOURCE – UNITED STATES BUREAU OF THE CENSUS
PER CENT OF SCHOOL ATTENDANCE – BY STATES
YEAR 1910
YEAR 1920
1920 AVERAGE
1910 AVERAGE
RHODE ISLAND
DISTRICT OF COLUMBIA
COMPILED FOR
NATIONAL ASSOCIATION OF MANUFACTURERS
J. P. LAMB, STATISTICIAN, CHENEY BROTHERS

CHART VI

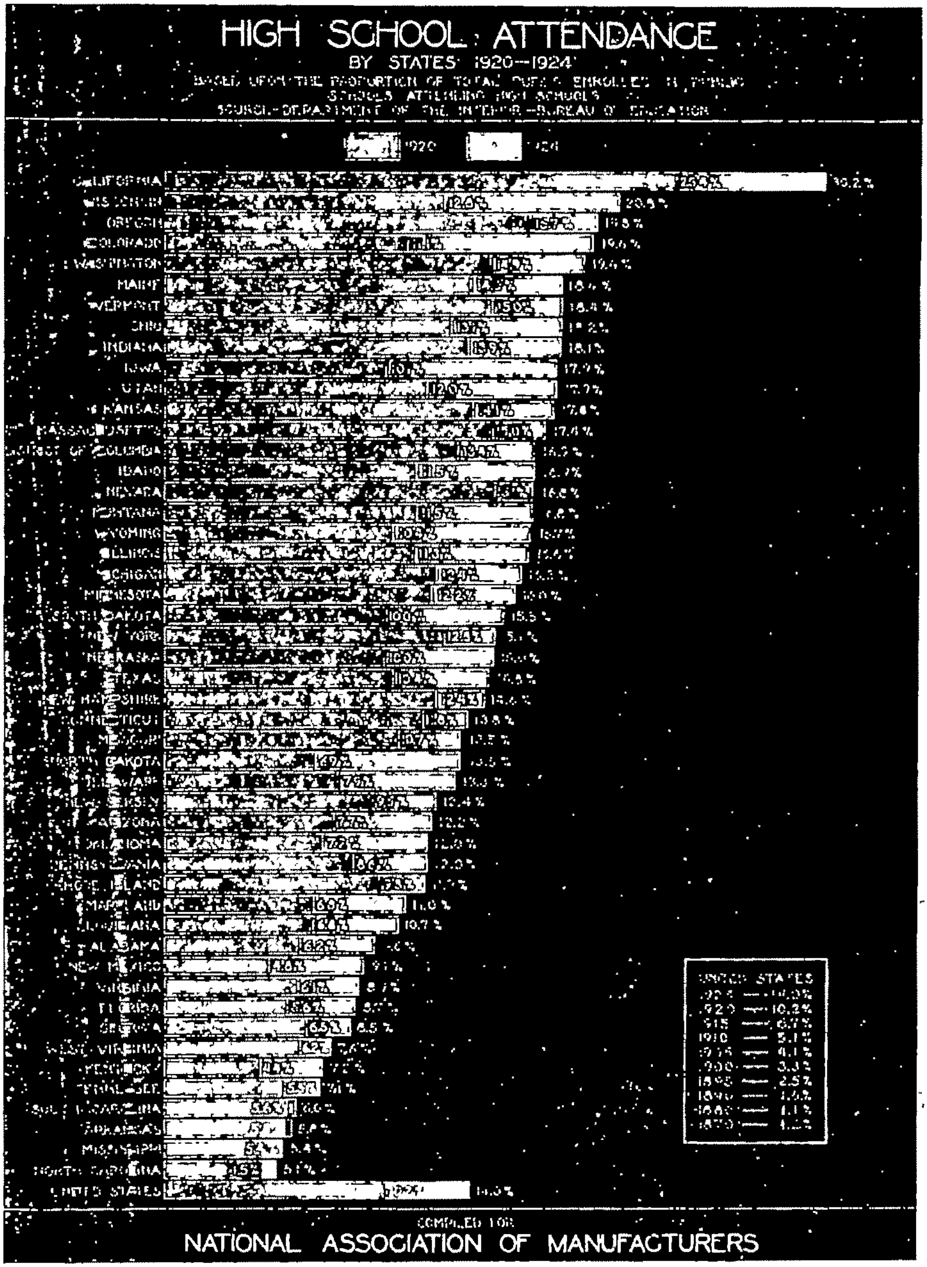
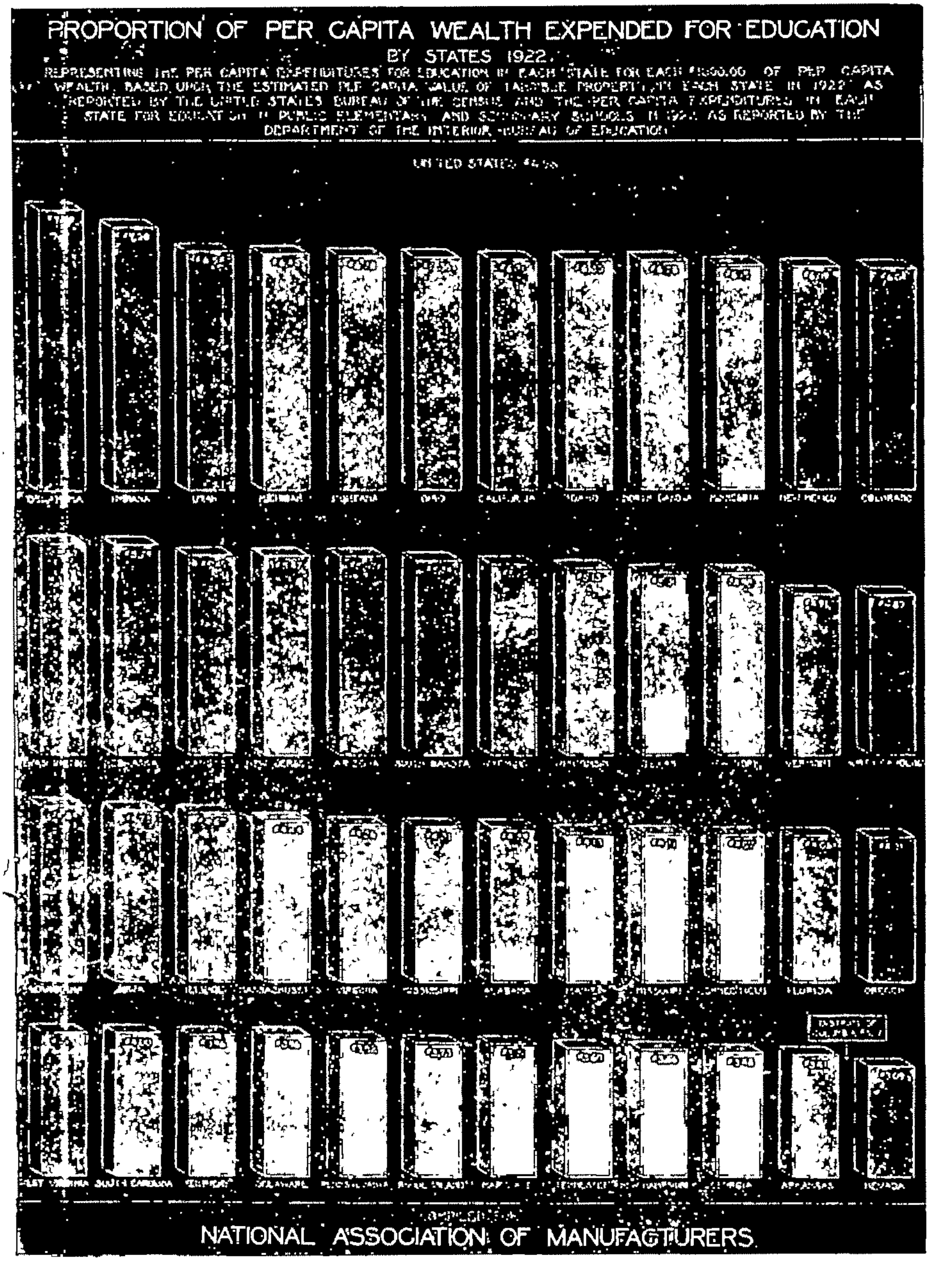

HIGH SCHOOL ATTENDANCE
BY STATES 1920—1924
1920
1924
CALIFORNIA
30.2%
WISCONSIN
12.6%
20.5%
OREGON
19.8%
COLORADO
19.6%
WASHINGTON
14.9%
19.4%
MAINE
VERMONT
15.0%
18.4%
OHIO
INDIANA
13.9%
18.1%
IOWA
17.9%
UTAH
12.0%
KANSAS
14.1%
MASSACHUSETTS
15.0%
17.4%
DISTRICT OF COLUMBIA
13.4%
IDAHO
11.5%
NEVADA
16.8%
MONTANA
11.5%
WYOMING
10.8%
16.7%
ILLINOIS
11.3%
16.6%
MICHIGAN
12.4%
MINNESOTA
12.2%
16.0%
SOUTH DAKOTA
10.0%
15.5%
NEW YORK
12.4%
NEBRASKA
10.0%
TEXAS
NEW HAMPSHIRE
12.4%
14.6%
CONNECTICUT
13.8%
MISSOURI
10.7%
13.5%
NORTH DAKOTA
DELAWARE
7.9%
NEW JERSEY
12.4%
ARIZONA
12.2%
OKLAHOMA
12.0%
PENNSYLVANIA
10.6%
RHODE ISLAND
MARYLAND
11.0%
LOUISIANA
10.7%
ALABAMA
6.2%
NEW MEXICO
VIRGINIA
FLORIDA
GEORGIA
6.5%
6.5%
WEST VIRGINIA
KENTUCKY
TENNESSEE
SOUTH CAROLINA
ARKANSAS
5.7%
MISSISSIPPI
5.4%
NORTH CAROLINA
4.5%
UNITED STATES
UNITED STATES
1920 — 10.2%
1910 — 5.1%
1900 — 3.3%
1895 — 2.5%
COMPILED FOR
NATIONAL ASSOCIATION OF MANUFACTURERS

Chart VII



PROPORTION OF PER CAPITA WEALTH EXPENDED FOR EDUCATION BY STATES 1922.

REPRESENTING THE PER CAPITA EXPENDITURES FOR EDUCATION IN EACH STATE FOR EACH $1000.00 OF PER CAPITA WEALTH, BASED UPON THE ESTIMATED PER CAPITA VALUE OF TAXABLE PROPERTY IN EACH STATE IN 1922 AS REPORTED BY THE UNITED STATES BUREAU OF THE CENSUS AND THE PER CAPITA EXPENDITURES IN EACH STATE FOR EDUCATION IN PUBLIC ELEMENTARY AND SECONDARY SCHOOLS IN 1922 AS REPORTED BY THE DEPARTMENT OF THE INTERIOR, BUREAU OF EDUCATION.

COMPILED BY

NATIONAL ASSOCIATION OF MANUFACTURERS.

Chart VIII

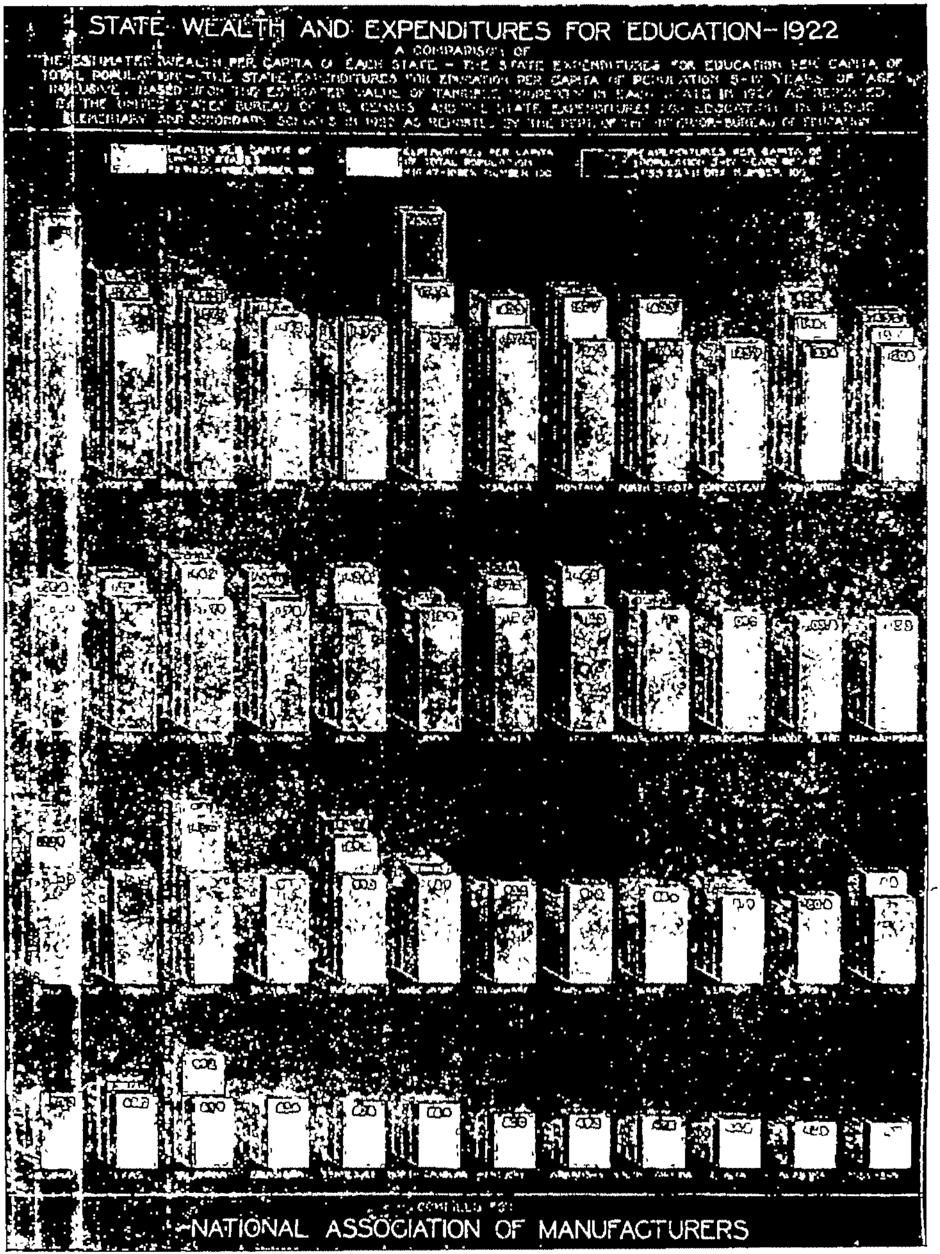

STATE WEALTH AND EXPENDITURES FOR EDUCATION—1922
A COMPARISON OF
THE ESTIMATED WEALTH PER CAPITA OF EACH STATE — THE STATE EXPENDITURES FOR EDUCATION PER CAPITA OF TOTAL POPULATION — THE STATE EXPENDITURES FOR EDUCATION PER CAPITA OF POPULATION 5-17 YEARS OF AGE INCLUSIVE. BASED UPON THE ESTIMATED VALUE OF TANGIBLE PROPERTY IN EACH STATE IN 1922 AS REPORTED BY THE UNITED STATES BUREAU OF THE CENSUS AND THE STATE EXPENDITURES FOR EDUCATION IN PUBLIC ELEMENTARY AND SECONDARY SCHOOLS IN 1922 AS REPORTED BY THE DEPT. OF THE INTERIOR—BUREAU OF EDUCATION
WEALTH PER CAPITA OF UNITED STATES INDEX NUMBER 100
EXPENDITURES PER CAPITA OF TOTAL POPULATION INDEX NUMBER 100
EXPENDITURES PER CAPITA OF POPULATION 5-17 YEARS OF AGE INDEX NUMBER 100
WYOMING
CALIFORNIA
NEBRASKA
MONTANA
NORTH DAKOTA
CONNECTICUT
MASSACHUSETTS
PENNSYLVANIA
NEW HAMPSHIRE
TEXAS
COMPILED BY
NATIONAL ASSOCIATION OF MANUFACTURERS

CHART IX

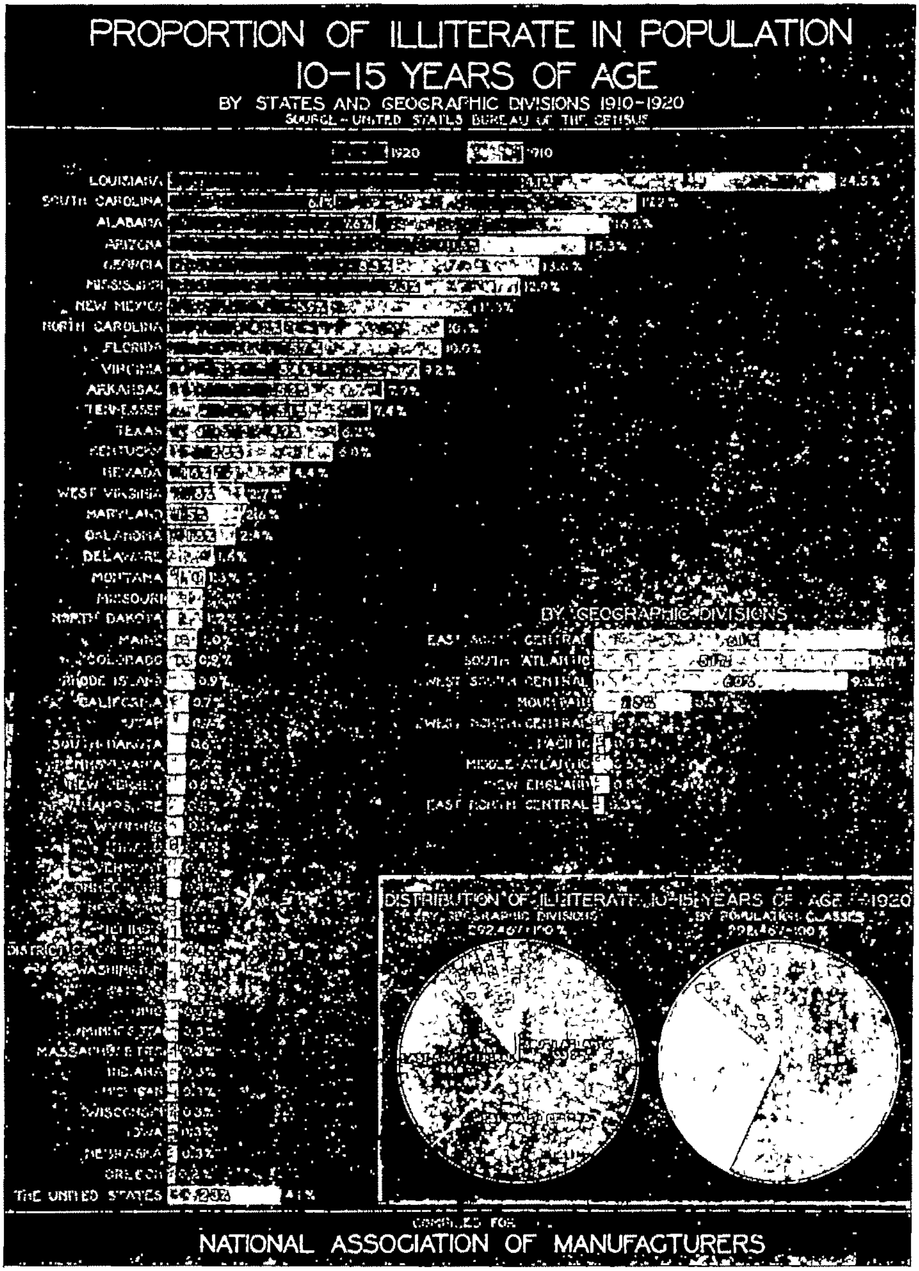

PROPORTION OF ILLITERATE IN POPULATION
10–15 YEARS OF AGE
BY STATES AND GEOGRAPHIC DIVISIONS 1910–1920
SOURCE – UNITED STATES BUREAU OF THE CENSUS
1920
1910
LOUISIANA 24.5%
SOUTH CAROLINA 6.1% 18.2%
ALABAMA 7.6% 16.8%
ARIZONA 10.5% 15.3%
GEORGIA 8.3% 13.6%
MISSISSIPPI 9.3% 12.9%
NEW MEXICO 5.9% 11.5%
NORTH CAROLINA 4.8% 10.%
FLORIDA 5.7% 10.0%
VIRGINIA 5.4% 9.2%
ARKANSAS 5.2% 7.7%
TENNESSEE 5.1% 7.4%
TEXAS 4.0% 6.2%
KENTUCKY 2.6% 6.0%
NEVADA 1.6% 4.4%
WEST VIRGINIA 0.8% 2.7%
MARYLAND 1.5% 2.6%
OKLAHOMA 1.3% 2.4%
DELAWARE 1.6%
MONTANA 1.3%
MISSOURI
NORTH DAKOTA 1.2%
MAINE 1.0%
COLORADO 0.9%
RHODE ISLAND 0.9%
CALIFORNIA 0.7%
UTAH
SOUTH DAKOTA 0.6%
PENNSYLVANIA
NEW JERSEY 0.6%
NEW HAMPSHIRE 0.5%
WYOMING 0.5%
VERMONT 0.4%
CONNECTICUT 0.4%
ILLINOIS 0.4%
DISTRICT OF COLUMBIA
WASHINGTON 0.4%
OHIO 0.3%
MINNESOTA 0.3%
MASSACHUSETTS 0.3%
INDIANA 0.3%
MICHIGAN
WISCONSIN 0.3%
IOWA 0.3%
NEBRASKA 0.3%
OREGON 0.2%
THE UNITED STATES 2.3% 4.1%
BY GEOGRAPHIC DIVISIONS
EAST SOUTH CENTRAL
SOUTH ATLANTIC 10.0%
WEST SOUTH CENTRAL 6.0% 9.1%
MOUNTAIN 3.5%
WEST NORTH CENTRAL
PACIFIC
MIDDLE ATLANTIC
NEW ENGLAND 0.5%
EAST NORTH CENTRAL 0.3%
DISTRIBUTION OF ILLITERATE 10–15 YEARS OF AGE 1920
BY GEOGRAPHIC DIVISIONS
292,467 = 100%
BY POPULATION CLASSES
292,467 = 100%
COMPILED FOR
NATIONAL ASSOCIATION OF MANUFACTURERS

CHART X

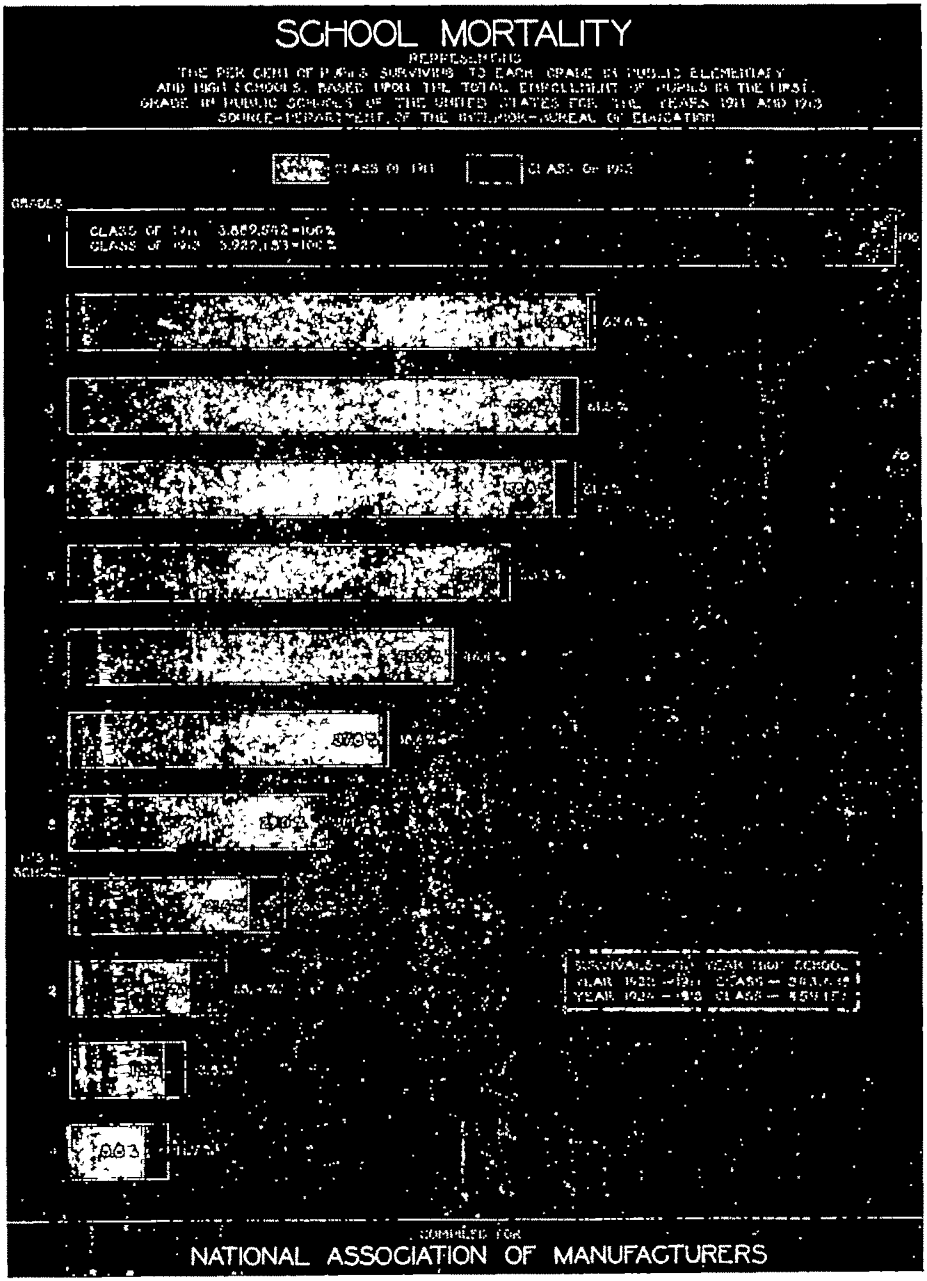
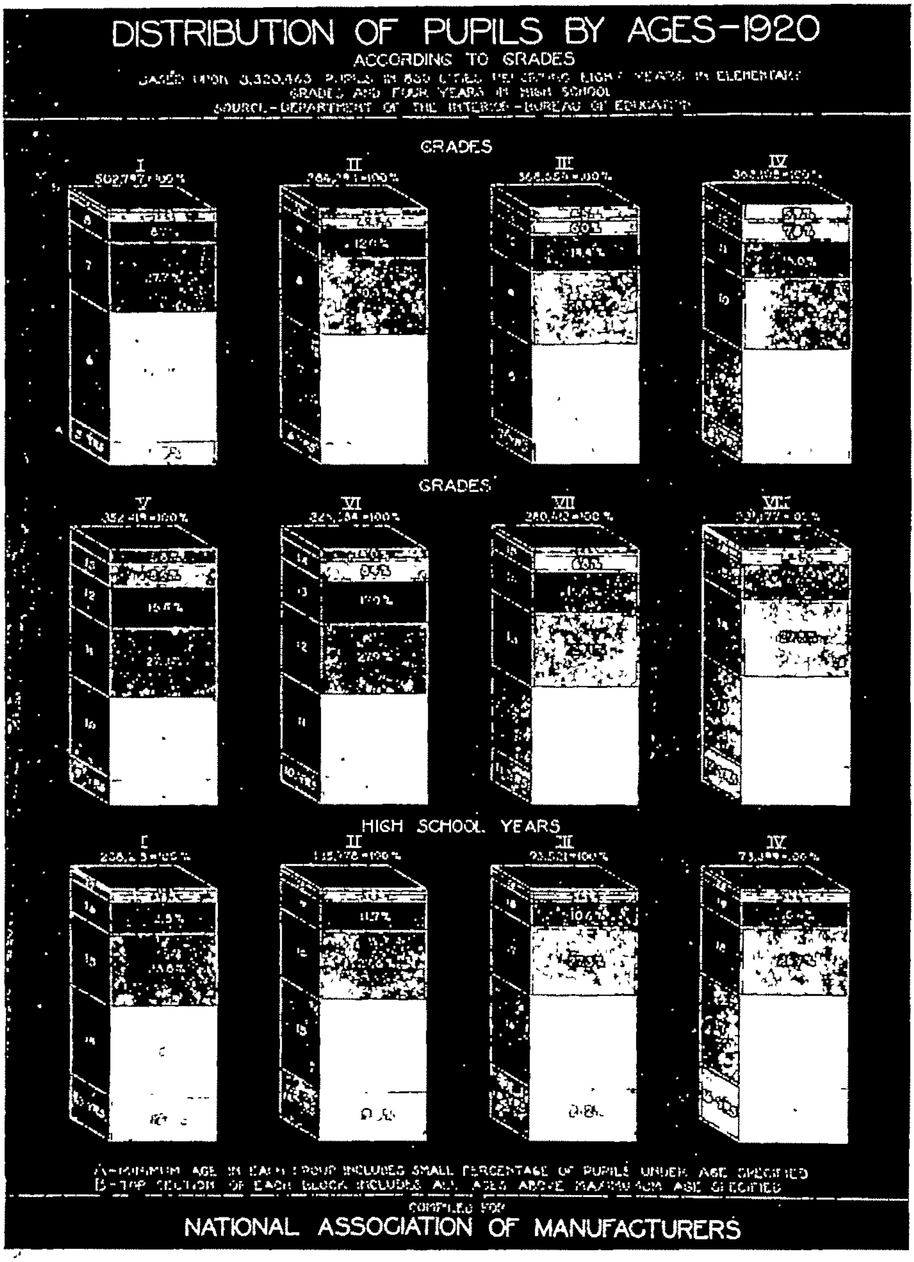

SCHOOL MORTALITY
REPRESENTING
THE PER CENT OF PUPILS SURVIVING TO EACH GRADE IN PUBLIC ELEMENTARY
AND HIGH SCHOOLS, BASED UPON THE TOTAL ENROLLMENT OF PUPILS IN THE FIRST
GRADE IN PUBLIC SCHOOLS OF THE UNITED STATES FOR THE YEARS 1911 AND 1913
SOURCE—DEPARTMENT OF THE INTERIOR—BUREAU OF EDUCATION
CLASS OF 1911
CLASS OF 1913
GRADES
CLASS OF 1911 3,869,542=100%
CLASS OF 1913 3,922,183=100%
100
HIGH SCHOOL
SURVIVALS—4TH YEAR HIGH SCHOOL
COMPILED FOR
NATIONAL ASSOCIATION OF MANUFACTURERS

Chart XI



DISTRIBUTION OF PUPILS BY AGES—1920

ACCORDING TO GRADES

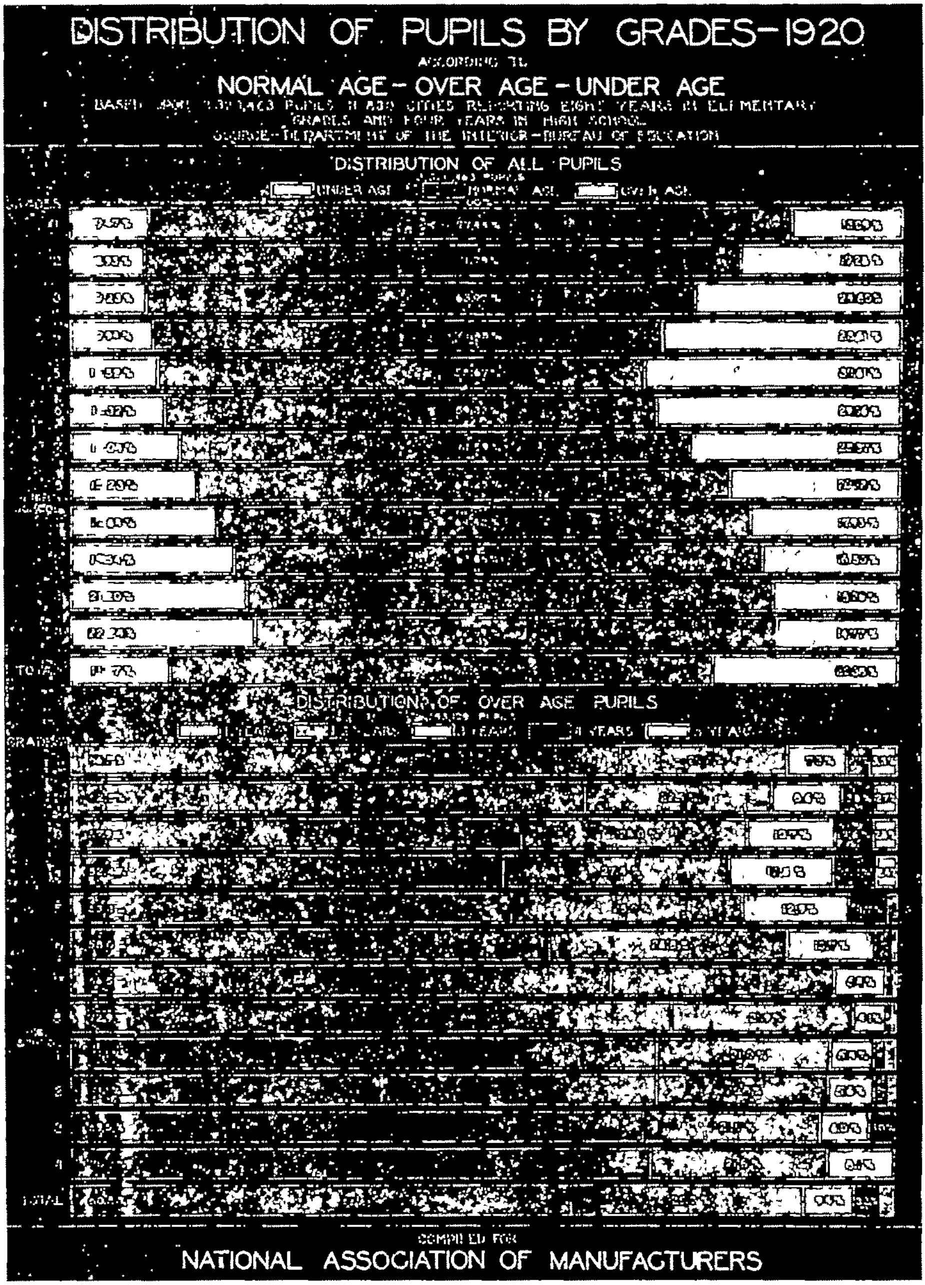
BASED UPON 3,320,463 PUPILS IN 835 CITIES REPORTING EIGHT YEARS IN ELEMENTARY GRADES AND FOUR YEARS IN HIGH SCHOOL

SOURCE—DEPARTMENT OF THE INTERIOR—BUREAU OF EDUCATION

A—MINIMUM AGE IN EACH GROUP INCLUDES SMALL PERCENTAGE OF PUPILS UNDER AGE SPECIFIED
B—TOP SECTION OF EACH BLOCK INCLUDES ALL AGES ABOVE MAXIMUM AGE SPECIFIED

COMPILED FOR
NATIONAL ASSOCIATION OF MANUFACTURERS

CHART XII


DISTRIBUTION OF PUPILS BY GRADES—1920
ACCORDING TO
NORMAL AGE—OVER AGE—UNDER AGE
GRADES AND FOUR YEARS IN HIGH SCHOOL
SOURCE—DEPARTMENT OF THE INTERIOR—BUREAU OF EDUCATION
DISTRIBUTION OF ALL PUPILS
UNDER AGE
NORMAL AGE
OVER AGE
GRADES
TOTAL
DISTRIBUTION OF OVER AGE PUPILS
GRADES
TOTAL
COMPILED FOR
NATIONAL ASSOCIATION OF MANUFACTURERS

The State's Responsibility Toward Child Labor Legislation

By Paul U. Kellogg

Editor of *The Survey*

I WONDER if one newspaper reader in ten realizes that we are witnessing not one, but two issues of public control bearing down the road of self-government in opposite directions: Federal prohibition enforcement and state child labor enforcement. Contrary to all the laws of processions, the wetter the issue the more dust it kicks up. The working children of the country are almost lost to sight in the rumpus; they might seem to be on a bypath, but if we look closer they are on the main highway.

In prohibition we are testing out the enforcibility of a scheme of Federal control in the touchiest and most exasperating area of governmental interference—the habits of adults. We adopted it in the high names of health and morals.

In protective labor legislation, we are testing out the sufficiency of a scheme of state control with respect to the most precious of our potential national assets—the conservation of children. And we have remanded it to the states in the high names of freedom and self-government.

Incidentally, we so remanded it not on its merits, but as a back-kick against prohibition.

Now everybody can get off a wise crack about prohibition enforcement; the thing is dramatized with rum-running and the gun play of high binders, and police dogs guarding precarious cellars in respectable neighborhoods. It is personalized, and tens of thousands of agitated citizens have rediscovered their love of liberty in the pit of their stomachs. But child labor is more remote from the sources and stages and springs of public concern.

If what happens to a wage-earning boy or girl were as near to us as what happens to our drinks; if the courts were clogged with suits for damages for wasted childhood, and stinted talents, and life-long handicaps as they are with liquor cases; if the headlines over the shooting-up of the organizer of a bootleg gang by his rivals were matched by those over the neglect of a state that lets fifty minors—boys and girls—be killed in its industries in a single year, then we might be as keenly aroused over this question of state enforcement where children are concerned as we are over the question of Federal enforcement where whiskey and beer are concerned.

Child labor and the Federal Government was the issue before the country two years ago when the 20th Amendment was up in most of the state legislatures, and was turned down, or passed over by all but four of them. That question will come back if the states fail to act. The child labor issue will not be settled until it is settled in an enduring way. But the question as it stands before the country now, with forty-four legislatures convening this winter, is not ratification of the Federal amendment, but what further the states are going to do themselves with respect to child labor within their own borders.

One of the tests of whether a state comes within what is called the registration area, in the matter of the vital statistics that would put us on a par with other progressive nations, is whether or not it keeps accurate tally of the babies born to its citizens. If it takes the trouble to register ninety per cent of their births it is included. The states which fall below this standard are:

Alabama, Arkansas, Colorado, Georgia, Idaho, Louisiana, Missouri, Nevada, New Mexico, Oklahoma, South Carolina, South Dakota, Tennessee, and Texas.

Accurate birth registration is more than a matter of statistics. It is a prerequisite of any state child labor law that has any teeth in it. Its absence undermines the enforcement of an age standard. It leaves a hole big enough for bus-loads of under-age children to be driven through the provisions of a law by ignorant parents or grasping employers. On the other hand, it makes it difficult for the over-age child to get "working papers," and if he is injured he may not be able to prove his age in those states where illegally employed children have no claim for compensation.

SHORTCOMINGS IN COMPENSATION LAWS

Let me take up this matter of compensation, because it lies outside the provisions of most child labor laws, and so is a fairly independent index of how far serious local concern for protecting children (on which we must lean if we rely on state action for regulating the employment of minors) has gone not only in many of the so-called backward states, but in states midway in the roll of child conservation.

And if I point out something of the shortcomings of our compensation laws, it is not because I am not ardently a believer in the constructive statesmanship that conceived them, the sincere, difficult and largely unappreciated service that often goes into their execution, as at the hands of the present Pennsylvania Compensation Commission.

The French, who seem to be able to combine national action with a measure of liberty that has associated them with that word in the idealism of the Western World, have a law that, when a workman is permanently disabled, the amount of compensation shall be based on the number of years he is likely to live according to the insurance tables. An old man would thus receive a comparatively small award, and a minor would receive a much larger award because he has normally to suffer loss from his mutilation over many more years than an old man. But our American compensation laws have not adopted this reasonable principle to date. No mere money can ever compensate a boy or girl for the loss of an arm, or a leg, or an eye. Yet under our compensation laws they recover sums based on their juvenile wage rates. Such awards are very slight. They do not stimulate employers, who are virtually all insured against this cost, to adopt the strictest safety measures. If you kill a man's cow, or smash his Ford, its probable longevity will make the killing and the smashing come higher. But not if you kill or maim his boy.

Moreover, twelve states throw the lever the other way round. They exclude from compensation minors who are illegally employed. These states are:

Delaware, Illinois, Iowa, Louisiana, Minnesota, Nebraska, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Vermont, and West Virginia.

What is the use of enacting measures protecting child workers, if you specifically free violators of those laws from paying the penalty of their carelessness of life and limb when it comes to boys and girls they have broken the law to employ?[1]

The Consumers' League of Pennsylvania, with the aid of the Pennsylvania Department of Labor, has given us some facts as to what this situation means in one great industrial state in one year.

The year studied was 1923. In that year

Ten working children under fourteen years of age were injured at their work.

Four less than sixteen years of age were killed at their work.

Fifty-one sixteen and seventeen years of age were killed at their work.

Eighty-one of that age were permanently disabled at their work.

One hundred and fifty-two of that age suffered amputations because of accidents in their work.

Read the stories they have brought together of the suffering, the blighted hopes, the broken lives, the struggles and frustration of these boys and girls.

But there is another side to this shield. It is possible not only to prohibit the employment of young children, but to prohibit the employment of minors in dangerous pursuits. And it is possible to hold to book the ruthless employer, who gets the business edge on his competitors by cutting under the protective laws to get cheaper help. In New Jersey and New York he must pay double compensation to minors injured while illegally employed. In Wisconsin he has to pay double to minors injured while at work in lawful employments but without the required permit. And in Wisconsin he must pay treble for minors injured in prohibited employments. The Wisconsin experience, and coupled with it the more recent New York experience, shows that this is a most effective stimulus to the obedience of child labor laws.

These facts about the progressive states (and not a little of my other data) I got from Mrs. Florence Kelley of the National Consumers' League, our most indefatigable champion of child labor legislation; and so I suppose that it was Moscow gold at Trenton and Albany and Madison that is bringing relief—if not restitution—to working boys and girls in those states who have had tendons torn in the day's work, or hands cut to a stump at the wrist; has brought safety to countless others. And in spite of the raucous opposition of some manufacturers and some manufacturers' associations, there has been many a forward looking employer who has thrown his weight, along with the labor unions and the social workers, and with citizens generally, behind such laws as those in Wisconsin and New Jersey and New York, behind the general child labor laws on the statute books of most of our states, behind the two Congressional acts which sought to set a national standard. Granted the conscientious principles of not a few, I suspect that some of the loudest opponents of the Federal amendment are equally opposed to state interference with hiring and firing, old or young. And yet there must have been, must be, some reasonable principle informing all these statutes which has appealed to so wide and varied a constituency of Americans, employers among them.

---

[1] It should be pointed out that damage suits can be brought in some of these cases, that is, cases where children illegally employed are injured. Ordinarily in Pennsylvania, I am informed, the employer when a self-insurer, or the insurance company carrying the employer's insurance will enter into a compensation agreement regardless of the question of illegal employment. One of the inducements for entering into such an agreement lies in the fact that such cases make excellent material for damage suits and it has been held by the Pennsylvania courts that a compensation agreement, executed and carried into effect by the payment of compensation, will bar a suit for damages until set aside by the Compensation Board. The occasional cases that have come before the Compensation Board involving illegal employment are all based upon efforts made by a claimant who has entered into a compensation agreement to have it set aside in order that the way may be clear for an action for damages. The Compensation Board has been averse to setting the agreements aside. The returns from compensation, though limited, are reasonably certain while those from an accident suit are highly speculative. Chairman T. Henry Walnut of the Pennsylvania Commission favors the amendment of the law to cover illegally employed children and to include a penalty at least in those cases where the employment was knowingly entered into contrary to law.

OPPOSITION TO GOVERNMENT ACTION

In the days when the first state laws were proposed, they were denounced as the entering wedge of a full-fledged socialism, just as two years ago the Amendment was damned from end to end of Massachusetts in paid advertisements as the camel's nose under the tent that would let in nationalization of children. As Americans, we delight in bogies; and when it comes to shivers up our spines, Hallowe'en rather than the Fourth of July is our natal day. If one were to judge by some of the present exponents of extreme individualism, of modern liberty, of warmed over states' rights and a rehashed *laissez-faire,* the pendulum has swung so far that we must throw out all social control through government action as a petty and fruitless attempt to settle things by passing laws, and consign it to the limbo of exploded theory. Just as, in the old days, your extreme socialist denounced such laws as palliatives, delaying the day of reckoning.

From one dogmatic extreme to the other the scarecrow has about-faced and blithers in the wind again. It has changed its coat, but it has the same old pants, and no legs in them. I refuse to see that it gets anywhere.

Rather, there has been something which appeals essentially to our American common sense, and constructive spirit, in the principle underlying our protective labor legislation of the last quarter century, of which our child labor laws are representative.

In a special sense our stout belief in opportunity for all vests in our hopes for children. We want them to have the chance we associate with the new world. We want our own child to have this chance. We want everybody's child to have this chance. And working our way slowly, out of a commonwealth of farmers and settlers into an industrial nation, we were confronted with the necessity of seeing to it that our children get that American chance under the changed conditions. On the one hand, we woke up to the waste, the misery, the suffering of children who had gone into mills and factories, we woke up to the realization that this was something outside our ken in village and countryside, and it stirred our wrath and concern. On the other hand, we have not taken kindly as a nation to schemes of government ownership. Our jealousy of the American opportunity entered in again. Socialism has been regarded as an imported theory. At all events the general run of people refused to choose between it as an immediate or desirable political goal and letting the human wastage in industry go forward,—as some of its extreme opponents, some of its extreme advocates, have argued they must choose.

We were confronted with somewhat the same problem in the sanitary housekeeping of our cities. A man's house was his castle. He owned his land, according to the old idea, from heaven to hell. But when he built on his land a house for several families, a congregate dwelling in one of our great and growing urban centers, where the health of one affected the health of all, then the law stepped in. It didn't step in without a fight, and it had to be new law, based on a new principle. Witness the uproar over the first tenement house law—the churchly landlords and legal big-wigs that viewed it with alarm and fought it. But the law won. In the growing cities of our industrial epoch we set a bottom level. Below that level the state stepped in to regulate, to prohibit. Above that level a home builder had all the liberty in the world. Below that level were cellar dwellings, and unsanitary privies, and dark airshafts, and windowless rooms. The level had to do with light, fresh air, and water—things we had had freely in small communities.

SETTING A BOTTOM FLOOR IN INDUSTRY

So, if more slowly, came the movement to set a bottom floor for the new corporate American industry. Above that level, liberty: freedom to bargain as men pleased, opportunity to experiment in striking the balance between efficiency and democracy in industry; above that level opportunity to work out an industrial order consonant with our ideals as a people. The process is still on. But here and now by our industrial minimum standards we have subordinated not a few hoary abuses and new evils. We have condemned the 12-hour day and the 7-day week; we have outlawed unguarded machinery, night labor for women, the premature employment of children. We have set a bottom floor for American industry—and if an industry cannot operate above it we have a shrewd guess there is something the matter with the industry.

It is this principle of the minimum which will help win the support of all conditions of Americans in the fights still before us to prevent further human waste in industry. It can be relied on as a force in constructive public opinion in the efforts to secure state action in the field of child labor legislation.

I would do nothing to stay such action. I would do everything to energize it. The welfare of hundreds of thousands of children waits upon it, and the National Child Labor Committee is putting its expert service at the disposal of the states.

But I believe one of the most fruitful methods of energizing state action is to keep the Federal amendment alive as a possibility. And my profound conviction is that if the states do not act it will become more than a possibility; it will become a national issue again which will not be so easily downed a second time.

And I would point out that this principle of the industrial minimum is clarifying with respect to the controversy between Federal and state regulation. The Federal amendment is an enabling act. It would give Congress power which the courts denied Congress, but which the states themselves hold. Under such an amendment the states would still hold that power above whatever minimum level Congress might set for the country as a whole. And there are edged questions as to how long the conscience of the country shall have to wait for backward states to fall into line where so much of human treasure is at stake; how many commonwealths, new to industry, must learn what the older industrial states have learned to the cost of their youth. There is no factory so obscure that the children it exploits do not become citizens of the United States. The business interests which get national tariffs, and national transportation systems, and national banking laws, cannot count indefinitely on popular palsy when it comes to something close to the people's hearts—once the people come to see what they can do about it. They cannot count on people failing to make distinctions between floor levels, and to see that we can readily ban our industrial sub-cellars and give free play to initiative above them—whether that distinction be written in a state law for manufacturing establishments within its borders, or whether that distinction be written broadly in a Federal act, setting a national minimum and giving the states free play in their law making and industrial practice above and beyond it.

When fourteen states seem to care so little for their children that they fail to register one out of ten of them; when six states, two of them (Missouri and North Carolina) with great manufacturing industries, have no compensation laws at all, so that maiming a child at work is cheaper than breaking a machine or spoiling a hank of raw material; when most states with compensation laws base their awards on wages, so that the younger the worker injured the less the employer has to pay; when at least seventeen states are so indifferent to industrial injuries to minors that they do not record them separately; and when twelve states, Pennsylvania among them, exclude from compensation all children illegally employed, thereby putting a premium on the outlaw employment of under-aged boys and girls—then it would seem that those who believe that state laws are sufficient to safeguard the oncoming generation of Americans have a heavy burden of proof to show that the states are alive to those children's interests. They will have to bestir themselves in securing state laws and state enforcements, adequate and country-wide, if they hope to keep down permanently the issue of national minimum standards protecting every growing boy and girl in America.

And those others who oppose such a course, not from conviction, but from a shortsighted selfish interest may not always have the prohibition issue to throw dust in the argument; nor Bolshevism as a bug-bear; nor be able to fool all the farmers all the time with the clap-trap that a Federal act will keep their sons from doing chores and their daughters from washing the dishes.

The Defeat of the Twentieth Amendment

By Thomas F. Cadwalader
Chairman, Sentinels of the Republic

THE proposed Twentieth Amendment to the Constitution of the United States, passed by more than two-thirds of the House of Representatives and of the Senate and submitted to the states on June 2, 1924, is practically conceded to have been defeated. Thirty-six of the state legislatures have definitely rejected or refused to ratify the amendment; four only have ratified. In one state, New Mexico, ratification was accomplished in the House, but no action has been taken in the Senate. Five state legislatures have adjourned without taking any action at all, and two, Maryland and Alabama, have had no session of their legislatures since the submission of the amendment. At least twenty states have certified to the State Department at Washington the fact that they have considered and rejected the amendment. Thirty-six ratifications are necessary for its adoption. It is apparent that they cannot be secured within any reasonable time, and as the Supreme Court has held that ratification must occur within a period that can be called contemporaneous with the proposal of the amendment by Congress, it is safe to say that this proposed amendment is dead.

This is the fifth amendment actually proposed by Congress that has failed of ratification. Two of the original twelve, submitted by the first Congress, failed of adoption by lack of one or two states, leaving the other ten to constitute what is commonly called the "Federal Bill of Rights." Another amendment proposed about 1812 to deprive of citizenship all persons accepting gifts or honors from foreign governments, likewise failed of adoption by a very narrow margin. The so-called Corwin Amendment, proposed in 1861, immediately prior to Lincoln's inauguration, in order to forestall secession by making the domestic institutions of the states inviolable, was abandoned and forgotten during the four years of Civil War. Thus, for sixty-four years no amendment proposed by Congress had failed of adoption and, with one exception, no such amendment had failed for one hundred and thirteen years. It might be added that no amendment enlarging the powers of the Federal Government at the expense of the states had ever failed to be carried through before.

Active Opposition

It is true that the proposed Twentieth Amendment was a far more direct and vital invasion of the reserved powers of the state governments than any that had gone before. It is also true that it was the first amendment proposed by Congress that would have vested in the Federal Government an unlimited power over any class of the population. For these reasons, it was vigorously opposed by many public spirited citizens in all walks of life, and although such organizations as the National Association of Manufacturers, the National Grange, the American Farm Bureau Federation, and others, took an active part against it, they only did a small part of the work that private citizens, constitutional leagues and other purely patriotic and disinterested bodies undertook. Among others, the Sentinels of the Republic, an organization formed for purely public purposes and supported entirely by voluntary contributions, took a leading part. In the State of Massachusetts, whose legislature in 1924 had, by a large majority, petitioned Congress to enact such an amendment, a popular advisory referendum was held in November, 1924, upon the question of ratification. About a million votes were cast after a very thorough public discussion and the result was in favor of rejection by three to one. The legislatures of four of the New England states were very nearly unanimous against the proposal. The Sentinels of the Republic had a large share in presenting the arguments to the people of New England, both through the press and on the platform. Nor did they confine their activities to New England. At a largely attended public meeting in Philadelphia in December, 1924, they carried the campaign against such an extension of the Federal power into a state which had, ever since the Civil War, supported the doctrine of centralization. At this time Pennsylvania was almost as emphatic as New England and the South in rejecting the proposed grant.

Among the arguments used in the course of this campaign appeared from time to time the statement that the amendment would authorize the nationalization of children, and its advocates were accused of seeking to introduce the principles of bolshevism. The opponents of the amendment were roundly denounced for making this accusation. Many responsible persons, however, were not afraid to repeat it. They took the position, not that the majority of the amendment advocates were communists at heart, but that they were misled into supporting a measure whose legal effect would be the introduction into the American Constitution of a distinctly communist principle. The principle that the child is a ward of the state, and that it is legal for the state to supersede the parents and direct the child, up to the age of eighteen, whether he shall work at all, at any occupation, and thus control his livelihood, irrespective of considerations of public health, safety and morals, is one that has hitherto been excluded from American soil. The power to be conferred by the amendment of prohibiting any and all labor up to eighteen might never be used to its full extent, but the mere granting of such power would radically alter the relation of the citizen to the government. If the existence of such arbitrary authority over the very lives of young people should once be conceded, what sanctity could be claimed for the personal liberties or the property of any class of the population? The Supreme Court has well said: "The theory of our governments, state and national, is opposed to the deposit of unlimited power anywhere."[1] This amendment by its terms would vest in Congress unlimited power to enforce a state of idleness upon all or any part of the population that had not reached the age of eighteen. By necessary implication, of course, Congress could go further and provide for the support and maintenance of the idle youth, and possibly could regulate their education and their recreation by way of enforcing a total prohibition of productive labor, whether such labor be at home, on the farm, in the factory or elsewhere.

There is no question, of course, as to the authority of the several states to regulate the conditions of the employment of minors, and even of women, with regard to their effect on the health, morals and safety of the population.

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[1] (*Loan Asso.* v. *Topeka*, 20 Wall. 663.)

The prohibition of work in factories and elsewhere of immature children and the requirement that they shall attend school for a reasonable time, are recognized portions of the police power reserved by the states. All such legislation has to bear the test of the rule of reason implied in the guaranty of life, liberty and property against arbitrary action by either the states or the Federal Government. But the express terms of this amendment authorize the prohibition of all work without any regard to the rule of reason, and, consequently, without the possibility of a review in the courts and the striking down of any unreasonable invasion of the most sacred right of any free man, that is to say, his right to work for his livelihood or for the support of those near and dear to him. If the Constitution of the United States should no longer guarantee this right, it is hard to see how its guaranties of the rights of property and contract could for long be sustained against the legislative power.

A FALLEN IDOL

This, which was probably the most fundamental ground of objection to the proposed amendment, was doubtless only partly appreciated by the bulk of the amendment's opponents. The objection to increasing the powers of the Federal bureaucracy and the further stripping of the state and local governments of their proper responsibilities, formed, perhaps, the more obvious and indeed all sufficient reasons for the rejection of the measure. This indicates a profound change in the attitude of the public. A very few years ago the response of the average man to any criticism of local administration of the law was to apply to the Federal Government to take charge. Federal efficiency was everywhere contrasted in the public mind with state and local inefficiency. The Federal courts in criminal cases convicted a far larger proportion of criminals tried before them than did most state courts. In civil cases their judgments were looked up to with higher respect. The administrative officers of the government seemed in general unapproachable, efficient and, one might say, relentless in performing their duties. Now, this impression has largely vanished. Not only the great object lesson of the failure on the part of the Federal Government to enforce the prohibition law, even to a reasonable extent, in the great centers of population, but their extraordinary inability for long periods of time to check smuggling, and to enforce the restraints on immigration, the break-down of the policy of curbing trusts and monopolies, the frequent exhibitions of inefficiency in such long established and peculiarly proper Federal functions as the Post Office, the Navy, the Army, the public lands, and last, but not least, in the administration of the income tax with its aggravating burden of "red tape" and delays—all these experiences have produced in the average citizen a revulsion of feeling. No longer does he think that Washington is the center of efficient government. He sees the Federal courts congested with petty cases and the wheels of justice refusing to revolve. He sees settlement of his personal affairs delayed for years, while the intimate details of his business are bandied to and fro between the desks of officialdom. He sees the bootlegger thrive and partakes liberally of his products. He reads that even foreigners coming to our shores are subjected, without apparent reason, to nameless indignities at Ellis Island.

On the other hand, he knows that he has not the same trouble with the authorities in his own city and state. Justice is administered far better in some states than in others, but in few is it subject to the delays and technicalities that hamper litigation in the Federal courts. His liberties are but slightly interfered with by his home government, and if the settlement of an estate entails complications, he finds the officials not only accessible, but willing to take those reasonable short cuts that the Federal bureaucracy never takes, except occasionally for sinister reasons, but without which neither public nor private business can ever get ahead.

DANGERS OF CENTRALIZATION

The American public in short is waking up to the fact that a centralized bureaucracy is an inefficient form of government. It was not the injustice or cruelty of the government of the Czars that produced the Russian Revolution. It was its frightful inefficiency in the face of grave emergency. The theoretical advantages of popular government would never have enabled the liberal forces which brought about the fall of the autocracy to accomplish their purpose if the people and the army had not been entirely alienated by a government that was sending its troops into battle without rifles, guns or ammunition. In the smaller European nations, centralized bureaucracy, in order to survive, is compelled to attach itself to despotic power, as in Italy and Spain. Russia, after its first brief experiment, has been compelled to revert to this Asiatic type of government. Democracy and bureaucracy are fundamentally incompatible, because bureaucracy cannot by its nature respond to popular needs and democracy is incapable of controlling its operations.

The truth seems to be that modern civilization is so infinitely complex that its regulation from above is beyond the controlling power of any group or organization of men. A dictator, it is true, may impose his will on a nation for a certain length of time and steer it in a certain direction. The error of his course may be all the greater because it is not apparent to contemporary critics. Peter the Great some two or three hundred years ago created the Russian Empire and for a long time his handiwork might be pointed to as proof of his statesmanship. But the greatest contribution of Russia to world history is probably the demonstration of the danger that exists in creating such massive governmental structures whose inevitable fall brings about the most irreparable ruin.

It is hard to say whether the framers of the American Constitution or any of them were conscious of the ultimate dangers inherent in the concentration of power. As individuals they were chiefly concerned with the preservation of the individual liberties of themselves and their children. They formed a government decentralized for peace, but holding concentrated power for war. The forces of concentration have appeared at times immensely strong and it has seemed that our whole system was gravitating towards imperialism as by an invincible attraction. It has seemed to some that the rejection of the proposed Twentieth Amendment was a case of halting on the brink of the precipice. But there have been other occasions when the same halt has been made. The Fourteenth Amendment was no doubt intended by its promoters to produce a complete concentration of legislative power in Congress. They found it necessary, however, in order to accomplish this, to load it down with purely political clauses that appealed at that time to the dominant majority. They carried it with the help of these clauses in spite of its ulterior purpose which was largely concealed from the people. The Supreme Court in construing it later by a five to four decision, adopted the probable views of the people whose representatives ratified the Amendment instead of the secret hopes of its draftsmen and promoters.[2] So construed it became a mere prohibition against the states from denying the individual liberties that their governments had been created to protect, and it has operated to vest no important powers in Congress other than those which that body had always enjoyed.

POPULAR OPPOSITION

At the present time the tendency towards centralization has not been resisted merely by a five to four decision by the Supreme Court, although in the first child labor case[3] a five to four decision did prevent the extension of bureaucratic power over this subject, through a perversion of the commerce clause. But the fundamental issue, whether to vest plenary power in Congress over the intimate domestic relations of the people, has been answered in the negative by an amazing popular majority, not confined to any state or section of the Union. While it is true that in Massachusetts alone the question was directly submitted to the voters, yet every legislature that rejected the Amendment, with one or possibly two exceptions, was elected after its proposal and when the matter was being debated by the public. The legislative majorities in favor of rejection were in almost all cases enormous, showing a tremendous weight of popular opposition to the project. It is a striking commentary on the aloofness of Washington from the currents of popular feeling that this repudiation of their work came as a complete surprise to the Congress which had by a large majority in spite of vehement protests submitted the proposal. It must be taken to indicate that the scheme of local self-government upon which the Constitution is based is one that at heart still appeals to the people of all of the United States. Even one of the four ratifying states—Arkansas, which ratified before the election of a new legislature—after further consideration, sought to recall its act, and if the result had then been in doubt, would probably have proceeded to test its disputed right to do so.

The contest between federalism and imperialism, or local self-government and centralization, will, of course, continue. But it is refreshing to believers in the principles of Anglo-Saxon liberalism to find that after one hundred and thirty-six years of experience, the people of the United States of America are still unwilling to adopt a scheme essentially foreign to all their antecedents. Like the English barons who, when pressed at the field of Merton to adopt the law of Rome in place of their own, clashed their shields and shouted, "*Nolumus leges Angliae mutare,*" the legislatures of the sovereign states of the Union have in the year 1926 given the same reply.

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[2] Slaughter House cases, 16 Wall., 36.

[3] *Hammer* v. *Degenhardt*, 247 U. S. 251.

What the National Child Labor Committee Is Doing at the Present Time

By Wiley H. Swift

Acting General Secretary, National Child Labor Committee

I HAVE been requested to tell something of what the National Child Labor Committee is doing at the present time and this I gladly do. The fact that I shall not discuss child labor and the Federal Government should not be taken to indicate any opposition on the part of the National Child Labor Committee to the Child Labor Amendment. It believes in the principle and in the form as adopted by Congress, and also in the social value of co-operation between the state and the nation not only in matters relating to the employment of children, but also in other matters. It believes that the nation should be in position to give full protection to every child from harmful employment whenever the family, the community, the country and the state all fail.

The Committee, seeking to insure reasonable protection from harmful and therefore wrongful employment by whatever legitimate means possible, concerns itself far less with the means than with the end. Full protection for every child could be provided by state legislation. The people in failing to ratify the Amendment, we feel sure, had no intention of expressing disapproval of all child labor regulation, but they did indicate a very decided preference to travel the state road to the goal and the Committee is ready, as it has always been, to travel with them.

Time does not wait and the tendency is for some children to enter industry as soon as the law permits. The law of any state, even where poorly enforced, undoubtedly serves as a standard by which most people govern themselves. For the sake of those children who are now employed, or who may be employed within the next four, six or eight years or more, the Committee feels that it should devote its attention to the matter of improving conditions and of preventing harmful employment by reasonably good state laws adequately enforced.

No sane person in this country desires or is willing to do any injustice to any child. Whatever harm is being done to children or society by improper child employment comes as a result, if not of ignorance then at least of a failure to understand the cost of child labor on the one hand, and proper standards on the other. The people must have some standard by which to measure themselves.

The legislatures of more than forty states will meet in 1927. The child labor laws of most of them should be improved in one or more respects, and it is practically certain that the subject will be given some consideration in every one of these states. Realizing all this, the National Child Labor Committee after very careful study has prepared and distributed as widely as possible a statement of Minimum Standards as follows:

MINIMUM STANDARDS

I. No child under fourteen to be employed at any gainful occupation.

II. No child under sixteen to be employed:

1. At any work or in any place dangerous, injurious or hazard-

ous. Places and occupations known to be dangerous, injurious or hazardous for children under sixteen should be enumerated in the law, but authority should be delegated to some state board to extend the list.

2. After seven at night or before six in the morning.
3. For more than eight hours a day, or six days or forty-eight hours a week.
4. During the hours when the public school is in session unless the child has completed the eighth grade or its equivalent.
5. Unless the employer gets a work permit from the proper school official upon the following four conditions: (Except that no work permit is to be required for work in domestic service or agriculture).
   (a) A promise of employment showing the exact nature of the work.
   (b) Evidence that the child is of legal age for that specific employment.
   (c) Evidence that the child has completed the eighth grade of the public school or its equivalent. If all other requirements are complied with, this should be waived during the time the public school is not in session, a special vacation work permit being issued.
   (d) A statement by an authorized physician showing that he finds the child physically fit for that particular employment.

III. No child under eighteen to be employed at any work or in any place dangerous, injurious or hazardous for children under eighteen. Places and occupations known to be dangerous, injurious or hazardous for children under eighteen should be enumerated in the law, but authority should be delegated to some state board to extend the list.

The National Child Labor Committee hopes that by the time the Federal Amendment is ratified by thirty-six states, if it is, these standards will have become so well fixed not only in the body of the law of every state, but in the mind of every thinking citizen and as a part of the community custom, that when the Federal Amendment is ratified there will not be nearly the necessity for thinking about Minimum Standards as at present.

Suppose a farmer has a meadow ready to cut and can't get a mowing machine. What is he to do? Wait around fussing with his neighbors because none of them will lend him a machine until the grass is ruined? Not at all, if he is wise. He gets himself a good scythe and wades in. A good man can cut a stack of hay any day and a stack of hay is not to be grinned at when the wind blows in January.

The illustration makes clear the policy of the Committee.

Whether the Federal Child Labor Amendment is or is not to be ratified, is of course a matter for the people to decide. While they are deciding, or even if they should decide not to ratify, the wise course it seems to us would be for the different states so to improve their laws regulating the employment of children that no child in the whole country would live without protection from exploitation by law. State law if it does the job is as good as any other law. In fact, it may be said that the most ardent advocates of the Federal Child Labor Amendment have from the first clearly understood that most of the job should be done by the states, and in pressing for the Federal Amendment we have only sought a way by which helpful co-operation could be established between the nation and the different states.

The State, the Nation and the People's Needs[1]

By Hon. Gifford Pinchot
Governor of the Commonwealth of Pennsylvania

THERE has been much discussion of late as to what taxes may properly be collected and what expenditures may properly be made by the state and Federal governments respectively. This is so basic a matter that the view adopted concerning it necessarily controls not only in financial affairs but in the whole scheme of our institutions. In particular it must influence the answer we make to the vital question: By whom shall our governments be dominated, and for whose benefit shall they be conducted?

Under the Federal Constitution the state and Federal governments are friendly allies, not opposing interests, in spite of much talk to the contrary. Let me recall that in an address delivered at the dedication of the present State Capitol of Pennsylvania in 1906, Roosevelt quoted with approval a letter of James Wilson, a great Pennsylvanian, signer of the Declaration of Independence, maker of the Federal Constitution, and Associate Justice of the Supreme Court of the United States, and said:

> He (Wilson) laid down the proposition that it should be made clear that there were neither vacancies nor interferences between the limits of State and National jurisdiction; and that both jurisdictions together composed only one uniform and comprehensive system of government and laws; that is, whenever the States cannot act, because the need to be met is not one of merely a single locality, then the National Government, representing all the people, should have complete power to act. It was in the spirit of Wilson that Washington, and Washington's lieutenant, Hamilton, acted; and it was in the same spirit that Marshall construed the law.

Chief Justice Marshall pointed out the danger of the opposite view with admirable clearness.

> Powerful and ingenious minds, said he, taking, as postulates, that the powers expressly granted to the government of the Union, are to be contracted, by construction, into the narrowest possible compass, and that the original powers of the States are retained, if any possible construction will retain them, may, by a course of well digested, but refined and metaphysical reasoning, founded on these premises, explain away the Constitution of our country, and leave it a magnificent structure indeed to look at, but totally unfit for use.

Need for State and Federal Co-operation

I have small sympathy with the view which regards every new use of the Federal power as necessarily a usurpation of rights properly belonging to the states. The recent outburst against President Coolidge's order for the co-operative use of state and local officials in law enforcement is a typical example. Federal and state action should be co-operative, and not hostile. This principle of Federal and state co-operation we have applied in the Pennsylvania Water Power Act of 1923, which alone among the laws of all the states, so far as I know, coordinates Federal and state authority over water power development into a harmonious and complete whole.

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[1] This is in part an address given by Governor Pinchot at the Governors' Conference held in Cheyenne, Wyoming, July 26, 1926.
— The Editor.

I deprecate the tendency to attack in a spirit of hostility the Federal Government for what it is properly doing for the people of the individual states. At the same time I insist that, as Roosevelt said, "the several States must do their duty or our citizenship can never be put on a proper plane."

THE EXERCISE OF FEDERAL POWER

But I recognize the fact that modern progress in America depends upon, and is inseparably bound up with, an increasing exercise of Federal power. This is true not only because modern means of communication—the railroad, the transcontinental telegraph and telephone, the motor car, the aeroplane, and the radio—must continue to result in a constantly closer national unity, but also because the problems before our people are in constantly increasing measure national problems beyond the powers of the states to solve.

The exercise of Federal power is growing and will continue to grow. It is growing not only because that growth is a necessity of our national existence, not only because we cannot otherwise protect the people against oppression by huge concentrations of wealth, but also because governmental units less than the Nation continually fail to do the things the people need; and the Nation itself is therefore obliged to make their failure good.

If the people need action and a township fails to supply it, the county naturally steps in; if the county fails, the state steps in; if the state fails, the Nation steps in. Many things are being done to-day by the Nation simply because the states, for whatever reason, have failed to give the people what they properly require.

Because the public utility corporations of Pennsylvania thirteen years ago, and again in 1925 and 1926, defeated legislation to give the State Public Service Commission control over security issues, I was compelled this year to ask the Federal Power Commission to control the security issues for financing the Conowingo Hydro Electric Project now being constructed on the Susquehanna River under Federal license. The Nation stepped in, and the people were protected after all.

In guaranteeing the movement across state boundaries of men, goods and information, unfettered by state restrictions, the Federal Constitution contributed the greatest man-made element to the economic well-being of the people of all the states. This it was that opened to American skill and American energy, armed with the equipment that we call capital, the greatest economic opportunity that mankind has ever had.

This guaranty gave to American business its unmatched opportunity for expansion over half a continent. It also made impossible any generally effective state control of that expanded business, and by so doing made necessary the exercise of Federal control. The present outcry for state rights for the most part ignores this fundamental necessity.

A state is no longer, if it ever was at all, a natural economic unit. The great public services which supply transportation, light, heat and power; the huge corporations which make, prepare, and sell steel, oil and coal to the citizens of a single commonwealth, are no longer confined within its boundaries. Their enormous resources in wealth, in political and social influence, and in legal ability are confined by no state lines and make the individual states in most cases, if not in all, helpless before them; and no one knows that better than the great monopolies themselves.

To illustrate, the outstanding barrier

to effective state control over telephone service by companies operating within the several states is the American Telephone and Telegraph Company. The problem of regulating it is the despair of all state utility commissions. The same difficulty inheres in every utility holding company which controls operating companies in two or more states.

Again, there is no better example of how a problem breaks across state and regional lines in an emergency than in the present agricultural situation. No practical man believes that the problem, for example, of wheat production and distribution, or of corn, can be confined to any individual state or solved by any individual state. It is a national question, and can be nothing else.

LAW ENFORCEMENT

There are to-day, three outstanding problems before the Nation—one mainly moral and two mainly economic. The moral problem—the greatest we have—is that of law enforcement. In dealing with that there must be no twilight zone between state and Federal authority where the enemies of society may hide themselves and escape punishment. Neither can we suffer the state-made nullification of our National Constitution, whether under the guise of a state referendum or by the failure of the state to exercise its co-ordinate powers. State and Nation both are needed in this fight for the Constitution, for self-government, and for national self-respect. All the power there is is not too much to exercise against the alcohol criminals.

An admirable example of the failure to co-operate from which criminals profit was the order of Secretary Mellon, in reply to my request for permission to the State Police to inspect breweries under Federal permit, in which he allowed them to enter the breweries during business hours only, it being, of course, well known that crimes are always committed during business hours and never after closing time.

CONTROL OF MONOPOLIES

Two great economic problems look our people squarely in the face. One is the conservation and wise use of our natural resources, so as to perpetuate our national life. The other is the control of great nation-wide corporate monopolies, so as to perpetuate our national institutions. Of this control Roosevelt said:

> But it is our clear duty to see, in the interest of the people, that there is adequate supervision and control over the business use of the swollen fortunes of today. . . . Only the Nation can do this work. To relegate it to the States is a farce, and is simply another way of saying that it shall not be done at all.

It should never be forgotten for a moment how much of the agitation against the use of Federal powers for the protection of the people comes originally from the great monopolistic corporations and their allies. They are against Federal control where Federal control can be effective. But they are equally against State control where State control can be effective. What they are really against is any effective control by whomsoever exercised. The one principle from which they never depart is opposition to any exercise of power by the people to prevent the corporations from dealing with the people solely in the interests of the corporations.

I do not speak of this matter from hearsay. I have served both the Nation and my own state, and in both capacities I have seen great monopolies using their resources to the limit to prevent the exercise of whichever power had undertaken in any case to regulate them efficiently in the public interest. By definite practical contact, extending over more than a quarter of a century, I have learned the utter futility of attempting to regulate interstate corporations by the action of a single state. Experience, which is the best of all teachers, has convinced me for good and all that nation-wide evils must be met by nation-wide remedies.

I am a loyal Pennsylvanian, but I am an American first. My state is the Keystone State, and the Nation has never called upon it in vain in any crisis. There is no more powerful commonwealth in America, but for all that I cannot shut my eyes to the essential fact that the steel trust, the oil trust, and greatest and most formidable of all, the growing electric trust, cannot be adequately dealt with for the protection of Pennsylvanians by Pennsylvania alone.

This is not to say that the state governments are not of high and increasing importance. Like the Federal Government, they are steadily attracting to themselves new functions. They are taking over from local governments important duties in highway construction and maintenance, in school financing and standardization, and in safeguarding the public health. To these they are adding new functions hitherto unperformed by any government, such as forest and water conservation, control of labor conditions, assistance to agriculture, and others.

These functions cannot be fulfilled as the public welfare requires unless a state government is efficiently organized, soundly financed, and economically administered in the interest of the whole people of the state.

There has been much talk against Federal appropriations to states on a fifty-fifty basis for the protection of forests, the building of roads, the safeguarding of childhood and the assistance of the farmer. Some of these protests come from my own state. They are based on the narrow and unworthy theory that each state exists for itself alone; that national taxes raised in Pennsylvania or in New York must never be expended by the Federal Government outside the states in which they are collected; and generally on the idea that we are not a nation but a mere agglomeration of independent communities each mainly anxious to get or keep everything it can at the expense of its neighbors.

This attitude of petty selfishness is widely and sometimes successfully employed as an appeal to local prejudice by the servants of monopolistic corporations in Congress whose actual purpose is certainly not the advantage of the plain people whom at the time they happen officially to represent.

Federal taxes raised in New York or in Pennsylvania are not alone the result of industries or activities in those states, but necessarily include the product of natural resources or industrial enterprises in other states. I have yet to be convinced that the expenditure of the Nation in the construction, for example, of the Salt River Reclamation Project in Arizona or in the improvement of New York Harbor is adding solely and only to the prosperity of the localities in which the actual work is done.

CONSERVATION OF NATURAL RESOURCES

My own experience in forestry and in the conservation of other public resources confirms strongly the theory that the Federal Government has worked generally for the interest of the average man. The charge made years ago that Wyoming and the other western states would suffer because of the support of the strong arm of Federal co-operation in forestry, irrigation, etc., has fallen flat. To-day the prosperity and wide improvement of the West, and the attitude of its people, supply the conclusive answer.

For over one hundred years a national system of highways has been the dream of American statesmen. Now that dream is being realized, and realized largely because the Federal Government is assisting the several states by spending money for highway construction in co-operation with them. And if some Federal money raised in Pennsylvania should be spent in promoting the prosperity and purchasing power of other states, it is bread upon the waters, for the industries of Pennsylvania will find that their bread will return to them even after many days.

I have yet to find reason for believing that the Golden Rule is less applicable to states than it is to individuals. Therefore Pennsylvania is protecting from pollution within her borders the public water supplies of the State of Maryland, and this just as carefully as she protects those of her own cities.

There are also regional questions which do not include the whole Nation, and which can best be handled by the means provided in the Federal Constitution of compacts between groups of states.

Last year Pennsylvania sought control by this method of electric holding companies doing business in a number of states, and electric operating companies doing interstate transmission. We were baffled by the extreme State Rights doctrinaires of a neighboring state. The result is that the process of combination in the electric business is going on by giant strides without due regulation by any authority, Federal, regional, or state. It is a perfect example of how mutual jealousies between state and Nation benefit none but those who would escape the power of both.

Roosevelt described himself as a strong Nationalist, and believed in the necessity for increasing the power of the Federal Government. So am and so do I.

> If, said he, we fail thus to increase it, we show our impotence and leave ourselves at the mercy of those ingenious legal advisers of the holders of vast corporate wealth who . . . are ceaselessly on the watch to cry out that the Constitution is violated whenever any effort is made to invoke the aid of the National Government. . . . The doctrine they preach would make the Constitution merely the shield of incompetence and the excuse for governmental paralysis. They treat it as the justification for refusing to attempt the remedy of evil, instead of as the source of vital power necessary for the existence of a mighty and ever growing Nation.

Prohibition Enforcement as a Phase of Federal Versus State Jurisdiction in American Life

By Hon. Lincoln C. Andrews
Assistant Secretary of the Treasury, in charge of Prohibition

LOOKING into our Federal Constitution, adopted to make our government "a more perfect union," we find three pertinent facts of immediate interest to my subject: First, that Congress was given the power "to regulate commerce with foreign nations and among the several states"; second, that the police power—the power to legislate for the promotion of the safety, health, morals and general welfare of the people—was reserved to the several states; and third, that property rights were safeguarded by the "due process" provision. The exercise of these two sovereign powers, and the appeal to this constitutional safeguard, had an early and continuing influence on the fortunes of the liquor question—marking the various historical steps, legislative and judicial, in the evolution of National Prohibition.

State and Federal Bickerings

Congress had laid imposts on liquors imported from a foreign country, and in 1827 the United States Supreme Court decided that the state could not interfere with such liquors until they had lost their "foreign commerce" character. Thus the commerce power of the Federal Government first appeared as a serious check on the exercise of the police power by the states.

In 1847 the question arose as to liquors in interstate commerce, and the Supreme Court held that in a matter of general interest a state could legislate in regard to interstate commerce until Congress stepped in to exercise its power in the same field. Thus the courts in 1827 checked state control of international liquor, and in 1847 allowed state control great power in interstate liquor.

In 1887 the see-saw started back again, when the Supreme Court laid down the doctrine that while a state might, under its police power, prohibit the manufacture and sale of intoxicants within its borders, nevertheless intoxicating liquor was a legitimate subject of interstate commerce, and that the state could not interfere with such commerce by prohibitive legislation; nor, since sale is an essential part of commerce, could it prohibit sale in the original package.

Close on this decision, in 1890, the Supreme Court renounced the previous doctrine that the states could legislate where Congress had failed to act. So we find the state denied the power to prohibit the introduction of liquor from other states, and to prevent its sale in the package in which introduced. Under these decisions, both foreign and interstate liquor marched joyfully where it would, immune from state police power while in original packages, and the most stringent state regulations were powerless to thwart it.

In addition to these disabilities, the "due process" clause of the Constitution was proving a serious check on the state's power to regulate intrastate liquors. The view prevailed that, although a state could prohibit, under its police power, that which adversely affected the public health, morals, safety or general welfare, the mere possession of liquors did not fall in this class, and consequently the police power could not be invoked to prohibit possession.

Of course these constitutional barriers later fell one by one as the cohorts of prohibition advanced, until the Supreme Court in 1918 held it constitutional for a state, under its police power, to make the possession of whiskey for personal use a criminal offense. Later it went so far as to say that the fact that such a statute destroyed property rights lawfully acquired in the liquor before the law became effective, did not constitute a violation of the constitutional mandate against taking property without due process of law. But this came later, and it may be said in general that in 1890 the states could constitutionally prohibit only the manufacture and sale of intoxicating liquors. It is interesting to note that during these years the Federal Government took no steps looking to direct Federal control of liquors through the exercise of its interstate commerce power, as it ultimately did in the matters of oleomargarine, white slavery, Louisiana Lottery, etc.

Thus we find the states,—because of Federal inhibitions, unable to cope effectively with liquor, either domestic or imported; and we find Congress unwilling to deal with it independently from the states. But we also find an insistent and ever-growing sentiment throughout the country against the traffic in intoxicating liquors. Consequently the Federal legislative development was along the lines of Federal co-operation in assistance of the states that wished to be dry.

Owing to the immunity afforded the original packages of liquor brought into the dry states from outside, these states found themselves overrun with "original package shops," and had to seek Federal aid in order to combat them. Congress felt that its sovereign commerce power should not remain a means of defeating the dry policy of a state, and passed the Wilson Act in 1890, which removed from imported liquors their character of "interstate" or "foreign" goods, upon their "arrival" within the state. This was intended to allow the state to prevent the sale of the imported "original packages." But the Supreme Court largely destroyed the value of this act, by construing arrival to mean "commercial" arrival—delivery to the consignee, not physical arrival within the borders. Delivery to the package shops for sale could be prevented, but delivery to a consignee for use could not. The shops were thus cleaned up, but any citizen could still receive all the liquor he chose to order. The state remained powerless to repress importation for personal consumption, and was deluged by liquors thus obtained.

Congress spent twenty odd years suggesting remedies for the shortcomings of the Wilson Act. There seemed to be constitutional objections to all of them, and nothing was done until 1913. Meanwhile the states in desperation strengthened their laws as they could, and began to limit the amount of liquor that a man could possess.

In 1913 Congress passed the Webb-Kenyon Act, which removed the protection of the commerce clause from any liquor intended to be received, sold or used in violation of the laws of the state to which it was sent; and subjected such liquors entirely to the control of the offended state. Both the Wilson Act and the Webb-Kenyon Act were attacked in the courts as unconstitutional, as attempts to delegate to the states a control of interstate commerce. President Taft, in his veto message, expressed doubt as to the constitutionality of the Webb-Kenyon

Act. The Supreme Court sustained both acts. It declared that Congress was dealing with a commodity, the transportation of which it might prohibit entirely, and which the states on the other hand were powerless to prevent being brought within their borders. Instead of prohibiting the liquor traffic entirely, Congress chose to take from it the protection of the commerce clause, and to leave it to be dealt with wholly by the communities whose problem it was. Thus in 1913 we find the Federal Government, judicial and legislative, positively in co-operation with the states—stepping out of the way and allowing the states to control both domestic and interstate liquors within their own borders.

MOVE TOWARD NATIONAL PROHIBITION

From 1913 to '18 events moved fast. In the end Congress abandoned its policy of assisting the states, and turned to that direct Federal control which it had theretofore eschewed. The desire for nation-wide prohibition had grown from an idealistic sigh to a positive demand. In 1913 the Anti-Saloon League launched its organized campaign for national prohibition. Between the years of 1914 and 1918, twenty-three states sounded out the sentiment of their people by the referendum. At the time prohibition became effective thirty-three states were dry. A resolution calling for a prohibition amendment to the Constitution was introduced into both Houses in 1913 and failed to pass in 1914. Similar resolutions were introduced in 1915, but not brought to a vote in either House.

But before this same Congress Senator Jones propounded his view that the states needed still further Federal assistance. Believing that the states were still powerless to combat "solicitations of orders for liquors" coming through the United States mails, he proposed an amendment to a post-office measure penalizing the mailing of solicitations into a state which had prohibited them. He was still working on the theory of Congressional co-operation with the states.

In discussing the Jones amendment, Senator Reed pointed out the inconsistency of fixing penalties for the mailing of solicitations into a state which forbade solicitations, while tolerating the shipping of the liquor itself into a state which forbade liquor. So the Senate in 1917 passed the Jones amendment, and at the same time passed Senator Reed's amendment—the Reed Bone-Dry Law—making it a Federal offense "to order, purchase or cause intoxicating liquors to be transported" into any state that prohibited the manufacture and sale thereof. Thus we see a complete about face on the part of Congress, and we see in Senator Reed of Missouri the father of the first national prohibition liquor law. It is also interesting to note that this law was passed by a Congress which had chosen not to bring to a vote a proposition for National Prohibition.

The Reed Law made the dry state bone-dry whether the state liked it or not. In fact it was suggested in debate on the Reed Law that it was proposed in order to so vex a dry state with its dry law that other states would hesitate to go dry. It did in fact make one state dryer than it intended to be. West Virginia prohibited the manufacture and sale of liquor, but permitted a parched citizen to bring into the state a quart of liquor every thirty days for his personal use. One fellow was caught while doing this, and tried in the Federal court under the Reed Law. The Supreme Court held in 1919 that he was guilty of a Federal offense, that the Reed Law was constitutional, and that any oasis in a state law that conflicted with it was invalid. West Virginia was suddenly bone-dry by Federal command. The only way she could allow her citizens to bring in their quart was to repeal her prohibition against the manufacture and sale of liquor—and it has been hinted that the liquor interests liked the Reed Law for just this reason.

THE 18TH AMENDMENT

The 64th Congress had declined National Prohibition and passed the Reed amendment. The 65th Congress passed the National Prohibition resolution. It was adopted by the Senate on August 1, 1917, without the provision for a concurrent power of enforcement in both the Congress and the states. Congress alone was given the power to enforce the proposed amendment by appropriate legislation. Dropping all consideration of state police power, the Senate went to the extreme of absolute Federal responsibility and control through the exercise of a thus to be acquired Federal police power, to be exercised throughout the states and communities of the land. This easily accepted conception of employing a highly centralized governmental police power, and this seeming disregard for our long cherished doctrine of states rights, would appear to be marked evidence of a wartime state of mind on the part of the Senate, when acting upon this resolution.

The debate on the resolution is interesting. The opponents of the resolution were against taking from the states their control of their local affairs and giving it to Congress. They felt that Federal co-operation had made it possible for any state to be as dry as it wanted to be, and that the minority of the states should not be forced to go dry because of the social views of the majority. The proponents of the resolution maintained that Federal co-operation had proved ineffective in aiding the dry states to become dry. Wet neighbors were too damaging an influence, even with full state and Federal co-operation. They maintained that since a dry state could not establish complete prohibition as a state, it had a right to urge National Prohibition; not primarily to stuff its views down the throat of a wet state, but for its own protection. They pointed out that while it might be a questionable policy for thirty-six states to impose their social standard upon twelve states, it was true that otherwise the thirty-six states could not protect themselves against the twelve states.

The House amended the resolution to read as the amendment now does—Congress and the several states being given concurrent power to enforce the amendment by appropriate legislation. It was stated by members of the judiciary committee instrumental in inserting this concurrent phrase—notably Mr. Webb and Mr. Volstead—that this phrase had been put in to make it plain that there was reserved to the states their power to enforce their prohibition laws; and that the granting of a like power to Congress should not have the effect of granting all such power exclusively to Congress. There was surprisingly little debate in the House as to the meaning of "concurrent" in the resolution. Both Houses seemed more interested in the giving of a new power to Congress than in the reserving of its old power to the states. They argued the question chiefly on principle, and did not pay much attention to the problem of how Federal and state control of liquors would work out in practice under the concurrent clause.

EFFECT OF THE AMENDMENT

Reading the record, it is my opinion that Congress as a whole had little conception of the practical difficulties of the enforcement of the amendment. The concurrent clause was inserted more as a concession to the psychology of the states than with the purpose of requiring the states to function in those fields of enforcement where the state police power rather than the Federal mandate would be not only more effective, but more consonant with our form of government.

The language of section 2 of the 18th Amendment is: "The Congress and the several states shall have concurrent power to enforce this article by appropriate legislation." What does it mean? The Supreme Court says that it does not mean "joint" power. The view that "concurrent" means that the power to enact appropriate enforcing legislation is in each—the state and the Federal—but that the legislation of Congress as the supreme law of the land supersedes any inconsistent state legislation has received some support from the courts. Support has also been given the view that the power is equally in each—the state and the Federal—neither having any over-riding force as to the other because each is effective in its own jurisdiction and the validity of each is to be tested only by the touchstone of appropriateness to the enforcement of the 18th Amendment. On one point, however, courts are uniform with one or two exceptions;—the 18th Amendment is *not* the *source* of the state's power to legislate with regard to intoxicating liquors, but the source of such power is still its police power, which inheres in it as a sovereignty. The 18th Amendment reserved to the state its police power over this question; it did not give it such power.

The effect of the 18th Amendment was to reserve to the states this police power in its entirety with the one limitation that the states were put under a legal disability to permit what the 18th Amendment prohibited. It even enlarges the state's power beyond the limits of its other police powers, since on other questions state laws are subject to constitutional inhibitions as regards "due process," interstate commerce, etc. In addition, the 18th Amendment by its terms gave to the states an authority concurrent with Congress over the importation and exportation of intoxicating liquors; and over liquors in interstate commerce, by the rule of constitutional construction which renders paramount an amendment subsequent in time to a prior constitutional provision which conflicts with it. The state gained much, and lost only the privilege and power to permit the manufacture, sale and transportation of intoxicating beverages. Congress acquired the police power, the several states retained theirs. The former policy of assisting the states by removing constitutional barriers to the operation of their police powers, was superseded by a plan for active co-operation in which each party has equal responsibility and power. This was a novel scheme in our government, ready to meet the test of experience.

THE COUNTRY'S REACTION

Let us see how the congressional plan worked, and is working. All the states except Maryland fell in line, and where necessary enacted appropriate legislation. The stage was auspiciously set for splendid action. But an unexpected psychology resulted in the withdrawal of most of the old skilled actors of this great drama, and left the stage largely to amateurs and a few monologists. We find co-operation on the statute books, but not carried out into the life of the community. A very curious picture. Here we had forty-seven of our forty-eight states with state prohibition laws and the machinery to make them sting. We had the Federal Government with a prohibition law. Now the Federal Government is a new actor on this stage—a new prima donna. The states are old troupers in enforcing all police power regulations, including this one, and they know the twists and turns. They get a hand from their audience—a helping as well as an applauding hand. They are the local stock company—so to speak—known to the folks. The new prima donna has not appeared on this stage before, having been only a supernumerary. When the curtain goes up, the company stays in the dressing rooms, make-up on, rôles perfected, and expects the new prima donna to play all rôles, including that of the villain. A very curious reaction, this attitude of the people, after they got National Prohibition.

The great forces of social reform that had worked so successfully for temperance along educational lines, instead of grasping this opportunity for a steady forceful advance to overwhelming success, apparently felt that their battle was already won, and ceased their organized efforts. The forces that had been so efficiently organized and led to accomplish these ends through political activities, now centered their energies upon the enforcement of the national law through Federal agencies. State, county and municipal law officers tended to overlook their own civic responsibilities under their community laws, and to pass the responsibility for prohibition law enforcement to the Federal law and its agents. The citizens of the country generally, thoughtlessly, and thus inconsistently with their inherent conceptions of the functions of government, tacitly and perhaps unconsciously relieved their own civic officers from their responsibilities, and looked to the national law in Federal hands for the enforcement of prohibition. Everybody looked to Washington, and placed the responsibility for law enforcement upon the Federal Government—and unfortunately for the law's success, the Federal Government was accepting this responsibility.

When I took office last year I found the Prohibition Unit organized and functioning on this basis. Highly centralized in control and responsibility, its field forces organized without due regard to their essential correlation with the field forces of the Department of Justice, prohibition agents throughout the United States were being called upon everywhere to exercise the Federal police power in local police affairs. And these agents were accepting the responsibility and arresting these petty law violators. In many jurisdictions this resulted in overwhelming the offices of the District Attorneys and clogging the Federal judicial machinery with thousands of petty police cases, not infrequently to the disgust of the Federal Bench and the discouragement of the District Attorney. More important even than this moral effect was the consequent demoralization of all the business of the Court. Already crowded with business resulting from the ever increasing number of Federal laws to be enforced, that promptness and certainty of trial and punishment so essential to successful law enforcement became an impossibility, and was being reflected in a growing disrespect for law on the part of all law violators.

Perhaps the most interesting phase of this development, and the most potent in its unfortunate effect upon the success of the National Prohibition Law, was the fact that while the citizens generally accepted the idea that the Federal Government should be responsible for the enforcement of the law, many of them nevertheless inherently resented this exercise of police power on the part of the Federal agents within their own communities as affecting their own individual privileges. This can be explained as thoughtlessness. Or perhaps it was the working of guilty consciences for neglecting their own responsibilities as citizens of self-governing communities who must necessarily make and enforce their own regulations for community welfare. Be it, however, thoughtlessness, guilty conscience or outraged conception of democratic government, the reaction was personal resentment, manifested far too often by law abiding citizens, both men and women, in wilful violations of the prohibition law. And this manifestation, peculiar as it may seem, evidenced itself in previously dry states, as well as in those that had never previously accepted state prohibition.

The demand for beverage liquor was insistent and apparently quite indifferent to cost. Money and brains were quickly forthcoming to organize an illicit traffic in liquor to supply this demand wherever it prevailed, and, keeping step with modern economics, created this supply, then created further demand to keep it moving, and thus a new form of liquor business grew and throve. Definitely an outlaw business, its success was necessarily conditioned to a great extent upon the bribery of officials charged with keeping law and order—so wherever its activities reached, it left a slimy trail of crime and corruption in its wake.

In the large cities the criminal classes turned from their precarious livelihood of safe cracking, loft robberies, etc., to this much more lucrative and far less dangerous profession of bootlegging. Innumerable citizens, under the present prevailing urge for easy money, turned from lawful pursuits to engage in this lucrative business. It is even reported that farmers in certain localities are now measuring their corn crops in gallons, rather than in bushels. Meantime the criminals' traditional fear of offending the Federal authorities was rapidly turned by experience in the slowness and uncertainty of punishment to a contempt for this same Federal authority. It is this condition that we have been and are now trying to correct in our effort to "Restore Respect for Federal Law."

PRESENT LAW ENFORCEMENT

Faced with this problem of law enforcement, and with these conditions, we had to answer these questions:

"What have we got to do?"

"What have we got to do it with?"

"How shall we do it?" In determining upon our policy, organization and procedure, two fundamental considerations were governing. First, a realization of the fact that any law to be effective must be in reality an expression of a standard of living generally accepted by the members of the community affected, which means that this standard is already observed by the great majority of the community, and written into a law only that it may be enforced upon the recalcitrant few by the police and court officers of the community. Applying this consideration to our problem, it required that the agencies of social reform be induced to take up again the task of education, so that the numbers who observe the prohibition laws may be materially increased, and the numbers who must be prosecuted as violators may be materially decreased. Expressed differently, this consideration meant that the prohibition laws must be popularized—both the laws and their administration must meet with more popular approval.

The second consideration was that the responsibility for the enforcement of the prohibition laws must be shared by Federal and local authorities. And this responsibility must be shared on clearly defined lines, so that each may have a definite objective, upon which it may concentrate its energies with a fair hope of success. Looking back into the years of struggle toward the accomplishment of prohibition, realizing how until the Reed amendment in 1917 the whole conduct of national government, both legislative and judicial, had been to show a marked sympathy with the efforts of the states to regulate the use of liquor, and to co-operate with them in a helpful way; and looking at the present anomalous and directly contrary situation in which the states now lay almost supine while the whole nation looked to the Federal Government for the success of prohibition; and realizing the inherent wrongness and unquestionable thoughtlessness of this latter attitude, it seemed the only and the natural solution that the Federal Government should undertake as its share to suppress the commercialized traffic in liquor, and thus prevent its introduction into the various communities of the country in commercial quantities, and that the states and communities should undertake as their share to suppress local violations with Federal assistance where necessary. This policy was adopted and approved by the Administration. The Federal forces are more and more concentrating their efforts upon this main objective, as the civic consciousness of the communities is again aroused to their responsibilities for self-government and Federal agents thus relieved from demands upon them for the exercise of local police power.

To me this division of responsibility seems so natural and so absolutely essential as not to require argument. It is in keeping with the growing appreciation on the part of thoughtful citizens that modern tendencies toward highly centralized authority and responsibility in Washington may lead to dangerous extremes. Consider for a moment the alternative—the Federal Government accepting the full responsibility for enforcing the national law in all the communities of the land. No one knows how many policemen would be necessary, and how many Federal police courts would be required, but the numbers certainly would be tremendous, and the political and social effects of their daily contact with the intimate affairs of the citizens of the communities might easily be most disastrous to democratic institutions. In fact, such a superimposed Federal police power is to my mind absolutely unthinkable in America, and bad enough in Russia. Such a solution is predicated upon so false a conception of our government as to offend the very fundamentals of our institutions, and I believe it could never be accepted by a thoughtful public. When his consciousness is stirred, the American citizen is still proud of his claim to the rights of self-government. This was happily illustrated last winter in the nation-wide protest against the Executive Order permitting the appointment of county police officers as Federal agents. It was considered an invasion of the citizen's sacred right to manage his own affairs through his own civil officials. It appears that this sense of civic responsibility and pride in its employment still exists, and has only to be aroused, when the communities of the land will again accept their responsibilities for law enforcement and see that they are faithfully carried out.

We have therefore steadily gone ahead in the execution of this policy. The organized forces for reform have again taken up their burden, and are on a campaign throughout the country in an effort to arouse the states and communities to a realization of the part they have to play, and the necessity of their playing it vigorously and promptly.

Meantime the Federal agencies have been reorganized on a plan of decentralization, the Federal Judicial District having been used as the unit in order that an intimate and active teamwork may be established throughout all the field forces of the Department of Justice and of the Treasury Department. Our representatives have been instructed to share with the District Attorneys the making of such cases against law violators as can be promptly and effectively prosecuted with the greatest effect for the common cause of law enforcement. The main objective of our energies is clearly defined to be the commercialized liquor traffic in all its manifestations. Our field forces are organized and our regulations made with the definite object of wiping out this traffic. The instructions to our field forces are to concentrate their efforts along specified lines looking to this end. Much energy, however, is dissipated by the continuing necessity of doing more or less local police work until the communities relieve us of this task. And I foresee that there will always be the need of rendering more or less assistance to state, county and municipal officers where local conditions are so unsatisfactory as to demand it.

It has taken time to effect the necessary organization and lay the necessary legal groundwork for the accomplishment of this Federal function, but real progress is now being made. In practical language, we have undertaken the elimination of the sources of supply for the organized liquor traffic, and the prosecution of the men who have organized and are conducting this traffic. These sources of supply are: smuggling, the diversion of industrial alcohol, the illegal manufacture of real beer in old time breweries, the diversion of medicinal spirits, the diversion of sacramental wines, and illicit manufacture in wild-cat distilleries and breweries.

Thanks to our executive agreement with the British Government, and to the negotiation of treaties with our immediate neighbors, marked progress has already been made against smuggling, and we are now confidently looking forward to the day when the smuggling of liquor in quantity will be completely done away with.

Thanks to the special appropriation of funds by Congress in June of this year, we have been able to organize special forces which are engaged in cleaning up the industrial alcohol field, steadily eliminating, one by one, the permittees who have engaged in illegitimately diverting alcohol to beverage uses. Great progress has been made already, and it is but a matter of time when all these permits will have been revoked, and this source of supply of alcohol eliminated.

Similarly for the supply of real beer, the same appropriation made possible the organization of a special force for this work, and with the aid of additional legislation requiring permits for manufacture of cereal beverages, we believe that this source of supply will be gone next season.

While much has been done by regulation to reduce the diversion of medicinal spirits, the existing law which authorizes the owners of spirits to sell in an open competitive market to wholesale and retail druggists, and to other permittees, has proven an insurmountable obstacle to complete control, and Congress will be asked at this session to pass remedial legislation which will make the control of medicinal spirits absolute.

Great difficulty was found in the issuance of sacramental wine, particularly to the Jewish faith, where lack of church organization and discipline made control almost impossible. This was a prolific source of supply. But a solution was finally arrived at, and the amounts of wine now issued for sacramental purposes are reduced to such an extent that diversion to illicit traffic has become negligible.

There remains as a source of supply illicit manufacture in wild-cat distilleries and breweries. As the other sources have been more and more controlled, the liquor traffic has turned more and more to this final source. Illicit distilling, whose product is known as "moonshine," has always been practiced in a small way; but this practice has developed under the prohibition Law, and become more or less nationwide. When used as a source of supply in quantities sufficient to justify an organized traffic, this must remain the objective of the Federal forces, and will require special organization and close attention for its elimination. But where quantities are small, and for local use and distribution only, these violators must be definitely the objective of local law enforcement agencies. We are approaching here the phase of law violation where the individual citizen manufactures intoxicating beverages within his home for his own use. It is clear that this should never be the object of Federal control. Under our present conceptions of the functioning of democratic government, this is clearly for the communities themselves as a matter affecting most intimately their community standards of living and ideals of social government and welfare.

I must call your attention to one other phase of the government's function under the National Prohibition Act. We have to administer this law through our permit system wherever it touches business and professions which use alcohol or spirits in their legitimate undertakings. Alcohol plays a vital part in many important industries, and it is government's function to encourage legitimate industry. We have literally thousands of permittees more or less dependent upon the functioning of our Federal offices for the success of their business. Going back to the first of our two fundamental considerations determining policy and procedure, and regarding the consideration that the law must have popular approval in order that it may be successful, it is a definite part of our policy that we shall administer the law in a liberal, prompt and courteous manner, thus commending it to popular approval. Determined efforts are being made to bring our personnel to a high standard of character and personal conduct in office. All are enjoined to a scrupulous observance of law in both personal and official conduct. They are to be an object lesson in law observance and in respect for law. Wherever our functions touch legitimate business, our offices are enjoined by promptness of action and fairness of judgment to make legitimate business feel that government is working with them for their success. In determining questions of general policy at headquarters, we are trying to impress the general public with the fairness and liberality of our judgments, to the end that existing resentments may be softened, and a better appreciation may be had of the law and its social and economic effects.

IN CONCLUSION

To sum up, the Federal Administration is assuming that the peoples of these United States intend to carry on faithfully under their present form of government, and will willingly reassume their duties and responsibilities as citizens under self-government; and the Administration is therefore actively working toward the day when the Federal Prohibition Unit will be a dignified efficient organization, engaged in the administration of the permissive features of the law to the satisfaction of the business public concerned, and in the execution of the enforcement features of the law by such close surveillance of the possible sources of supply and avenues of traffic as will prevent the movement of liquor in commercial quantities into any local jurisdiction; and engaged through cooperation in helping state, county, and municipal authorities, to make possible the success of their own expressed determination to live as social communities free from the presence of that traffic in liquor which they have denounced as a crime in their social existence. We can and will do our part. The people can do theirs.

Social Aspects of Federal and State Control

By Samuel McCune Lindsay, Ph.D., LL.D.
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THE inevitable conflicts which arise in two overlapping or intertwined jurisdictions in which quasi sovereign or independent powers of government are exercised, may be considered in respect of the economic factor, or the legal factor, or the social factor involved. It is probable that no one of these factors can be completely isolated and considered apart from the others, but we may at least attempt in the present discussion to emphasize the social factor in order to understand better the complex problem of jurisdictional conflict which is economic, legal and social.

Importance of Economic Factor

The economic factor is concerned chiefly with the extension of uniformity of standards applicable over the widest possible area of governmental activity. The legal factor has to do with the maintenance of the integrity of the separate jurisdictions and of that delicate and necessary balance or equilibrium implied in the constitutional arrangements designed to secure a maximum of equality and liberty to both. The social factor, however, comprises those forces and processes which express and formulate standards of conduct and institutional practices consistent with the type of social organization found in the separate jurisdictions.

A stable and efficient government depends on a clearly defined, well understood and generally accepted distribution of powers between its component parts. This is particularly true of a federal-state type of government, such as we have in the United States where the citizens owe allegiance to a dual sovereignty. It is still more true in a dynamic era of rapid social and economic change in environmental adjustments.

Three general propositions concerning Federal and state jurisdiction in our American system receive practically unanimous assent. Indeed in present-day discussion they are usually considered axiomatic. They are:

First, the power to regulate or control must be coextensive with the thing to be regulated, that is with the problem that furnishes the subject-matter of control.

Second, the final say, or the ultimate power that determines decisions of policy, whether expressed in legislation or in administrative action, should reside in the people nearest to the persons directly affected in the exercise of control, that is in the smallest units of political organization, consistent with the ability to ascertain and execute the popular will.

Third, in order to secure economy of administration and to avoid friction and unnecessary conflict of jurisdiction, there should be a minimum of overlapping of jurisdiction and no twilight zone in which no authority is competent to act, and forces subversive of either jurisdiction may operate to weaken or paralyze the efficiency of the power or authority in either or both jurisdictions.

Admitting the validity of these general propositions, and granting for the sake of argument that the facts of our constitutional history to date show that our state courts of last resort and the Supreme Court of the United States have consistently approved a course of permissible governmental action which fairly well harmonizes with these generalizations, we are still confronted with many unsolved problems in the ancient and ever more pressing task of making democratic government efficient. How can the collective intelligence and resources of the community be mobilized and brought to bear upon the task so that the social aims and the highest social standards of an undisputed majority of the people can be realized? That is merely another way of stating the social factor in the conflict of Federal and state jurisdiction.

It may be well to emphasize a fact that is often overlooked that it is the *majority* standards and their effective realization which constitute the real social problem. The protection of minorities in their clearly defined constitutional rights when exercised so as not to be subversive of the will of the majority is quite another problem, more of a legal nature than social. The abuse of minority rights and the tyranny of minority rule constitute a still different problem having its roots in defective social organization. There are, of course, standards of minorities, and sectional standards in process of an educational evolution which may emerge as the majority standards of tomorrow. That is another problem entirely. Educational forces can well take care of that, though it may be necessary to invoke the compelling force of legal sanction and governmental support in order to protect minorities in the rightful use of educational methods to those ends.

The most striking illustrations of the rôle the social factor plays in jurisdictional disputes will be found in the domain of labor legislation. In the long and hard fought battles to regulate the length of the working day, the economic factor finds its solution in approximate uniformity of standards secured by various means in competing states and in reciprocal arrangements between state regulation in employments that may be largely interstate in character, and Federal regulation in interstate commerce subject to exclusive Federal control. Thus, after the eight-hour day had become the rule rather than the exception in the basic industries of the country, secured by Federal and state legislation for governmental employments, by state legislation for many employments, and partly by trade union agreements in private employments, the Adamson law, a Federal enactment, made the eight-hour day the basic day in railroad employment, subject to necessary exceptions due to the peculiar requirements of that industry, and thus brought the Federal jurisdiction into harmony with the conflicting state jurisdiction for other industries.

The twelve-hour day in continuous industries has been practically abolished by a gentlemen's agreement in the iron and steel industry, adopted recently by almost unanimous consent of the chief establishments involved, which were so highly organized and centralized that they were able to control the action of a large part of the industries affected and the rest had to follow suit. That was done through co-operative action and without legislation. It has not yet been confirmed or extended by legislation. Neither is the result secure and permanent until it is embodied in protective legislation making it part of a definite social policy. This particular agreement or public understanding is perhaps better enforced than most of our social legislation. The social factor, however, is not fully met by an arrangement that merely demonstrates the economic truth that a shorter than a twelve-hour day will not put continuous industries out of business. The question whether workers, who must devote twelve hours to earning their living with the added time incidentally consumed in working a twelve-hour day, have sufficient time left to meet the requirements of citizenship, of family and community responsibilities in accordance with the minimum standards of an American democracy, is a social question. No conflict in jurisdictional control, whether governmental or industrial, should be tolerated that will prevent the execution of the deliberate verdict or decision solemnly arrived at in that matter.

The slowness with which we apply the collective powers of government in the solution of such questions is due not so much to our traditional individualism as to the ineptitude of government itself and that in turn is due in large measure to jurisdictional conflicts. Mr. J. M. Keynes, the well-known author of *The Economic Consequences of the Peace*, *The Economic Consequences of Mr. Churchill*, and the economic consequences of many other things, has pointed out in a recent brilliant essay on "The End of *Laissez-faire*" that the paralyzing influence of *laissez-faire* on economics and more particularly on legislation in the 19th century and down to the World War must be attributed in large part to the mistakes, the failures and the incapacity of governments to deal with the social factors in public affairs. That is true of the United States as well as of England and here it is accentuated by the conflicts of Federal and state jurisdiction which so often have hamstrung both authorities.

It is high time we faced the facts. We must cease to rely on legal patchwork and changes in the mechanics of governmental organization if we hope to secure efficient execution of well considered and widely approved social aims.

CO-OPERATION AND CONCURRENT POWER

There are at least two bits of recent experience which throw light on the possibility of Federal and state co-operation. The first one is the matter of child labor prohibition and regulation.

CHILD LABOR

The first Federal child labor law, an act to regulate child labor in interstate commerce, approved September 1, 1916, to go into effect one year later, assumed that the Federal authority could, under its exclusive power over interstate commerce, do within the domain of the Federal jurisdiction all that was necessary to make uniform certain standards already adopted and enforced under state legislation within the domain of state jurisdiction. The second Federal child labor tax law, enacted in 1918, assumed that the tax power of the Federal authority would accomplish the same purposes when the Supreme Court decided that the commerce clause of the Constitution did not give the grant of power assumed in the first child labor act. But the Supreme Court held that the taxing power likewise was inadequate for these purposes and indicated that an amendment to the Constitution giving a direct grant of power would be the best way to secure the co-operation of Federal and state governments in this kind of control. Congress replied by submitting in June 1924 the 20th Amendment not in the form of an exclusive grant of power to the Federal Government but on the basis of concurrent power; but to date this amendment has been ratified by only four states. The significant lesson of this experience is not the present fate or future prospects of the Child Labor Amendment, but rather what we may learn from what happened during the brief periods when these two laws were in full effect before they were held invalid by the Supreme Court.

The record of co-operation and avoidance of conflict is a remarkable one already made public in a recent publication (Bu. Pub. #78) of the Children's Bureau in the United States Department of Labor, which was the Federal agency charged with enforcement of the first act and co-operating with the Bureau of Internal Revenue of the United States Treasury Department in that of the second.

During the time when those two acts were in force, we had precisely a similar situation with respect to the administration to that we would have had if there had been a constitutional amendment like the Prohibition Amendment, or if the grant of power had been explicit in the Constitution. What happened? The forty-eight state jurisdictions, nearly all of which had dealt with this subject for a long time, developing standards that approached the minimum standards of the Federal law in some cases, exceeded them in many cases, and fell below them in only a few, rapidly adjusted their laws and their administration to those minimum uniform simple fundamental standards which were necessary in their several jurisdictions to the exercise of power to be co-extensive with the problem to be handled, which was almost nation-wide. In the course of the enforcement of those essential fundamental standards, a few simple things, not the details of child labor regulation that would appeal to the most enlightened communities as necessary to protect their working children, nor those that would appeal perhaps to people in many communities, as proven by the various standards enacted and enforced in other communities, were done by the Federal Government which greatly strengthened and enlarged the local standards.

In the administration of the first Federal child labor law there was no serious difficulty, friction or conflict between the Federal Government and the states. There was on the contrary a fair distribution of duties. The two jurisdictions worked together. There was a principle of co-operation, which we may well borrow from private industry and apply to governmental tasks.

PROHIBITION AMENDMENT

The second bit of experience is that with national prohibition, which we need scarcely more than mention after the very interesting exposition of its history and present plans of its administration by General Andrews.[1] Here we have concurrent power specifically provided for and the Supreme Court has interpreted it to mean clear cut definite power for each jurisdiction in its own sphere to deal with the same thing at the same time or at different times and to the same extent as the other, without any bugaboo of double jeopardy either, for the citizen is simply made answerable for his conduct to both sovereignties to which he owes allegiance by virtue of his dual citizenship. The meaning of concurrent power, as judicially construed in the leading national prohibition cases decided June 7, 1920,[2] and its possibilities for usefulness in the solution of the social factor in the conflict of Federal and state jurisdiction, as reaffirmed and amplified in the Vigliotti[3] and Lanza[4] cases and in the still more recent Dora Herbert case, decided in November 1926, merits serious consideration and research on the part of the student of political science who seeks a solution of the problem of jurisdictional conflict.

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[1] *See* page 77.

[2] *Rhode Island* v. *Palmer* 253 U. S. 350.

[3] 258 U. S. 403, decided Apr. 10, 1922.

[4] 260 U. S. 377, decided Dec. 11, 1922.

The Prohibition Amendment provides for its enforcement and the enforcement of the laws pursuant thereto, on the theory of co-operation by the Federal and state governments by the second section of the Amendment which says: "The Congress and the several States shall have concurrent power to enforce this article by appropriate legislation." The Supreme Court has held that this provision of the Amendment is within the amending power, is a part of the Constitution and "must be respected and given effect the same as other provisions of that instrument," and that it is "operative throughout the entire territorial limits of the United States" and "of its own force invalidates every legislative act, whether by Congress, by a state legislature, or by a territorial assembly, which authorizes or sanctions what the section forbids."

"CONCURRENT POWER"

The Court has also held that "concurrent power" does not enable Congress or the several states to defeat or thwart prohibition, but only to enforce it by appropriate legislation, and that it does not mean joint power, or require that legislation thereunder by Congress to be effective shall be approved or sanctioned by the several states or any of them; neither that the power to enforce is divided between Congress and the several states along the lines which separate or distinguish foreign and interstate commerce from intrastate affairs. The power granted to Congress in this section of the Amendment, while not exclusive, is territorially co-extensive with the prohibition of the first section and is in no wise dependent on or affected by any action or inaction on the part of the several states or any of them. Likewise the words "concurrent power" were construed in the Lanza and other cases to protect the states in the exercise of all the powers they possessed previously or subsequently not inconsistent with the Amendment and without depending in any way on the act of Congress or the exercise of Federal power within their territory. Says the Court in the Lanza case:

> We have here two sovereignties, deriving power from different sources, capable of dealing with the same subject-matter within the same territory. Each may, without interference by the other, enact laws to secure prohibition, with the limitation that no legislation can give validity to acts prohibited by the Amendment. Each government, in determining what shall be an offense against its peace and dignity, is exercising its own sovereignty, not that of the other. It follows that an act denounced as a crime by both national and state sovereignties is an offense against the peace and dignity of both, and may be punished by each. . . . This view of the Fifth Amendment (containing guarantee against Double Jeopardy provision) is supported by a long line of decisions by this Court.

Space will not permit here a discussion of the double jeopardy problem, which is not a serious one in the enforcement of social legislation nor likely to defeat the real purpose of the constitutional guarantee, which was to protect the citizen from judicial or executive tyranny. Indeed, while double jeopardy is of course repugnant to the spirit of our laws and institutions, something akin to it may operate to make social legislation more binding and enforceable and thereby contribute to give law-abiding citizens the benefits of laws which they have enacted for their welfare, which is an equally good, substantial and valuable guarantee to that of not being "subject for the same offense to be twice put in jeopardy of life or limb."

Concurrent power opens vistas of possibilities for the realization of the three general and quasi axiomatic propositions concerning Federal and state jurisdiction in our American system of public polity with which we began this discussion. The late President Harding, in his celebrated Denver speech of June 25, 1922, on law enforcement, sensed this solution of jurisdictional conflicts and of the social problems involved. He said:

> The problem of concurrent jurisdiction is not a new one brought to us with the Eighteenth Amendment. It is as old as the Federal Government. It has required to be dealt with by Congress and legislatures, by executives and courts, in a multitude of relations to commerce, finance, transportation, and indeed the whole realm of concerns in our complex society. It has demanded our attention in all the multitude of issues ranging from the regulation of trusts and transportation, and even of certain relations with foreign governments, to the proposal for a uniform statute of marriage and divorce.
>
> There have always been those who insisted that particular policies could not be carried out because of the conflict of jurisdiction; but experience has proved that whenever a given issue became so acute that evasion was impossible, procedures have been devised for dealing with it. Whoever will go back to the debates over the enactment of the anti-trust law, or the discussion of the interstate commerce measures, must recognize that these were but varying phases of the same general question that comes before us in connection with the enforcement of the prohibition law.

It would seem that the theory and principle of concurrent power might be worked out so as to make jurisdictional conflicts less of a territorial matter and thus reduce their number and difficulties to matters which could be settled more on their merits and less on technicalities of law.

If jurisdiction can be clearly defined there is ample precedent for the assertion that governments have adequate power to be efficient in the exercise of their constitutional powers. The Federal jurisdiction finds this ample authority in the special grant to Congress in the Constitution (Sec. 8 p. 18)

> to make all laws which shall be necessary and proper for carrying into execution the foregoing powers and all other powers vested by this Constitution in the Government of the United States, or in any department or officer thereof.

As for the states the decisions of the courts of last resort and of the United States Supreme Court in making effective the system of workmen's compensation for industrial accidents furnishes the most striking illustration of how constitutional limitations may be broadly construed to meet new conditions in a revolutionary change in social policy where jurisdictional powers are clearly defined.

The Supreme Court of the United States, in three ruling cases, handed down in 1917, nearly ten years ago, and arising in three separate states of New York, Iowa and Washington, presenting different constitutional question,[5] established the validity of compulsory Workmen's Compensation laws under the police power of the states. There were a great many questions, doubts and conflicts that various state courts had judged somewhat differently, and decided somewhat differently which the Supreme Court finally cleared up, and the interesting and significant thing to the political scientist and sociologist, in those decisions, is the clear enunciation of the principle that, where the power is clearly defined as being derived from the police power of the state or vested by the state or Federal constitutions, the necessary powers to carry that out efficiently go with the vested or derived powers. In other words, the Court brushed aside a great many questions that had caused difficulty in the state courts, on the distinct theory, clearly laid down, that the right of a state legislature to enact a compulsory compensation law under the police power of the state carried with it necessarily the right to do those reasonable things that will enable the state to enforce such a law. Those decisions are worth examining. We will find in them a good deal that is significant for the new experiments in our constitutional history with concurrent power which will determine jurisdiction,—experiments destined to become more and more necessary and inevitable as time goes on with the increasing complexity of social and industrial life.

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[5] *N. Y. Central Railroad Co.* v. *White*, 243 U. S. 188, *Hawkins* v. *Bleakly* (Iowa), 243 U. S. 210; *Mountain Lumber Co.* v. *Washington*, 243 U. S. 213.

Our past history, if carefully scrutinized, will allay most of the fears of Federal overlordship. We shall find that our constitutional history does not justify the fears that have caused so many people to hesitate in making political decisions that would solve some of our problems of conflicting jurisdiction.

State and local legislatures as policy forming and determining organs of government are not doomed to extinction, but are destined to play a larger and more important rôle in a social policy that makes possible and guarantees minimum uniform standards on a national or even international scale, commensurate with the problems to which they apply, and at the same time makes possible and guarantees no less positively the initiation and development of policies built on those minimum standards, but enlarging and applying them within narrower limits. More important still is the need for a social policy that provides the fullest possible co-operation in both Federal and state jurisdictions in the technique of administration and in securing efficiency in the enforcement of law.

The Controversial Subject of Federal Control in Education

By Dr. Frank Pierrepont Graves

President of the University of the State of New York and State Commissioner of Education.

WHEN we started on our career as a nation, there was no provision made for a Federal department of education, and we are for the first time in our history seriously urging that one shall be created. When advocating this proposition, we should not be misled by certain utopian remarks made by various Fathers of the Constitution—Washington, Jefferson or Madison—into maintaining that they wished to have such a branch of government immediately established. They never visualized any such thing as a reality. Their statements represented one of the many ideals that they vaguely hoped some time in the future might be materialized, and to quote their visions as a patriotic argument in favor of the present concrete project, as has been done by some enthusiasts, is both idle and absurd. On the other hand, it is quite as far-fetched to point to the tenth article of the Constitution, wherein it is stated that all powers not expressly granted to the Federal Government are to be reserved by the states, as evidence that the Fathers were opposed to a national department of education. Either of these arguments involves the "historian's fallacy," and reads back present day thought and conditions into an older period.

From Ideals to Facts

As a matter of fact, the founders of the Constitution gave no serious thought to education. Indeed it was not until about the time of the Civil War that we were generally able to have education unified even under state control. It was a generation later than that in the South, and some of us at the head of state systems are somewhat skeptical as to educations being even yet as fully centralized in the states as would be for their best interests. Certainly we shall make little progress one way or the other by quoting historic statements as precedents. Whether we are to have a Federal department or not will have to be determined by a presentation of our existing facilities and needs.

We did, indeed, make a slight gesture toward federalization in 1867, when, through the influence of General Garfield and others, we established what was for a year or so known as a department of education. But we soon repented of our rashness and reduced the so-called department to an innocuous bureau, which it has remained ever since. It is quite innocent of all real powers, with a commissioner of education at the head who receives one-third the salary of a state functionary, and it is limited largely to the collection of statistics and to reporting and disseminating its findings.

It was not until 1918 that we began to have visions of anything larger. In that year, as a result of revelations from the draft, we found some most unhappy shortcomings in our educational system, which forced us to pause in our complacency and take thought. The National Education Association, keenly awake to the situation, then appointed a committee, which, with the aid of other educators of experience and training, soon presented a report. This led to the formulation of a bill for the creation of a Federal Department of Education, headed by a secretary in the President's Cabinet, and for a vigorous attack upon the abuses that had been found to exist in education throughout the country.

The work of this N. E. A. committee and the resulting bill may be regarded as a most expeditious and creditable performance, but they did not begin to possess the accuracy—not to say omniscience and infallibility—to which the authors seemed to lay claim. That is shown by the number of times the proposed legislation has had to be changed. Starting in 1919 as the Smith-Towner Bill, it became successively the Towner-Sterling, the Sterling-Reed, and the Reed-Curtis bills, until the creators would hardly recognize their child, and no one knows what it will look like at the coming session of Congress. In all legislation, concessions must be made, of course, but if the sponsors of the proposal had been a little less confident and more willing to conciliate, upon two occasions at least the bill might have been enacted and received executive approval.

PURPOSE OF THE BILL

The bill in its various forms, however, as we have seen, has always had two chief ends in view. One purpose was to remove the defects revealed by the war, such as illiteracy, inadequate teacher training, and neglect of physical education. This improvement it was proposed to accomplish by means of apportioning additional Federal funds, aggregating one hundred million dollars, to the various states according to their needs. Naturally the proposal was not received with any great enthusiasm by the wealthier states, which had already found from bitter experience with previous Federal subsidies that it meant paying out five or six dollars for every one they received back, and they insisted that all states could perfectly well meet the necessary school expenditures if they but had the will to do so. This the proponents of the bill have made it their business to refute by showing that educational outlays in the various states correlate fairly well with their actual wealth.

A more serious objection made by the opponents is that the distribution of funds by the Federal Government is sure to lead to interference with the systems of the several states and to the establishment of an educational bureaucracy. The advocates, however, claim that nothing could be further from the intention of the bill, which limits the prerogatives of the national department to an annual audit.

The other main object of the bill is to cure a serious looseness in the national administration of educational interests. Through the lack of a centralized agency, the government has distributed the functions of education among about forty departments, divisions, bureaus, commissions and boards, with overlapping and conflicting powers, and it would seem to be high time that some unity in purpose was established for education. This has led to an expression of fear on the part of certain opponents—President Butler in particular—lest our national government be completely changed and the functions of education be absorbed and dominated by a remote body in Washington, while the people in the various states are absorbed in matters at home. The obvious answer, which will probably be made to this argument, is that transportation and communication have been so expanded and facilitated that San Francisco is actually nearer to Washington today than Philadelphia was at the time that the Constitution was created, and that there is little ground for the assumption that governmental functions will be carried on in a pocket without knowledge of the people.

Wanted: An Active Coördinated Government Bureau of Education

By Dr. Samuel P. Capen
Chancellor, The University of Buffalo

THE issue of a Federal Department of Education is for the moment largely academic rather than political, it seems to me, but I am persuaded, nevertheless, that more individuals in the United States are interested in this issue than in any other issue now before us as a nation except prohibition. The individuals who are interested are not so vociferous as certain other groups and they have not learned how to make themselves politically as effective as some others, but their aggregate number is enormous. It runs into the millions.

There have been before Congress in the last eight years a number of bills, beside the famous Smith-Towner Bill and its successors, bearing on the question of the extension of Federal influence in education or on the improvement of the Federal Government's operations in this field. I do not remember just how many there have been, but they must number more than a score. Of course the major ones have been proposed by the educational forces. A good many others have been proposed by members of Congress to pacify or to forestall the educators. I suppose more legislation has been suggested on this subject than on any other important subject in the same period of time. As I have studied the reports of the hearings on these measures and read the periodical literature dealing with the question, there has kept coming to me with renewed force the impression that much confusion of mind exists both among educational people and among members of Congress. The confusion, I think, is both as to the appropriate function of the United States Government in such a field as education and also as to the possible effects of measures that have been proposed.

THE FUNCTION OF GOVERNMENT

We have derived certain principles of governmental action during our experience of one hundred and thirty odd years. I think the principles that I am about to try to enunciate are more the result of accident than of anybody's design. But however they may have originated, they are at least plain. The Federal Government is engaged in two essentially different types of activity. The first type—and the one we most commonly think of when we think of the government of the United States—is represented by the set of activities that are necessary for the organization and protection of the United States as a national entity. Such things, for example, as raising revenues, conducting foreign relations, providing for communications throughout the country, administering justice and providing for national defense. In the prosecution of all of these activities the government must exercise mandatory powers. It always has exercised them. It cannot exist unless it does. If necessary it must back up its decisions in these fields with all the physical force of the nation. These activities are coeval with the life of the nation and they are represented in the structure of the government today by the older group of departments—

Treasury, State, War, Navy, Post Office, etc.

However, as the nation grew and its life became more complicated, and as modern inventive genius brought new devices to civilization, the Federal Government was forced by the pressure of its citizens to concern itself with another set of activities entirely different. This set had nothing whatever to do with the organization and protection of the United States as a nation. It is the group of activities which roughly might be classified as productive or creative. In dealing with these the government has evolved—and I think largely by accident—a quite different technique.

The activities that I have tried to classify as creative are such activities as agriculture, commerce, labor, health, social welfare, science, education. Some of these already are represented in our administrative machinery by separate executive departments. But how have those departments on the whole proceeded? Their job has been very different from the task of the older departments. It has consisted largely of promotion, of stimulation with either no control at all of the interests concerned or with very little control. Or stated in other terms, the function of the government has been primarily to furnish facts and information, to solve problems, and to coordinate the work of many individuals and groups within the states through outstanding national leadership. Think back in your minds over the history of the Department of Agriculture, or the Department of Labor. The Department of Agriculture originally had no mandatory powers. It was an information office, the business of which was to inform the agricultural interests of the country, to solve some of its scientific problems, to persuade the individual members of that great interest to improve their processes. The same was certainly true in the beginning of the Department of Labor. The Labor Office was an office for the ascertaining of facts, the solution of problems, and it had no administrative jurisdiction.

I said a moment ago that it may have been largely accident that the departments dealing with the creative activities of the nation had no powers in the beginning. At any rate, it seems not to have been clear to Congress that they should never have any powers, because of late years there has grown up a tendency to give to the Department of Agriculture, to the Department of Labor and to the Department of Commerce, laws to enforce, subsidies to distribute and regulations to carry out. In my own private judgment the helpfulness and influence of those governmental organizations has been weakened every time any one of them has been endowed with a new set of powers. Now if you agree with me that there is this distinction in the activities of the government, and that the technique of the government should and ought to be essentially different in prosecuting these two types of activities, then it is patent that if Federal influence in education is extended, as many people wish to see it extended, there must be very clear recognition of the limitations on the government's proper sphere of action in this field.

PRESENT GOVERNMENT ACTIVITIES

We have been told that the Federal Government does various things in the field of education. I do not know just how many Federal offices at the moment deal with education. When I was connected with the Government some six or seven years ago there were about forty different Federal offices with educational functions, most of them making some kind of appeal at times to the educational systems of the states. The majority of these enterprises were rather inconspicuous and I know that some of them have since been abolished. But we still have several different important centers of educational work in the government establishment. The one that comes to everybody's mind first is the Bureau of Education, which was created some sixty years ago and the principal function of which is to collect information, to disseminate it, and to make such studies of educational problems and situations in the United States as it is able to make. It is a small office in the Department of Interior, very inadequately equipped for its task. Then there is the States Relations Service in the Department of Agriculture, a very large and potent office, which distributes subsidies under the Smith-Lever Act, directs the experiment stations and is in general in charge of the agricultural educational efforts in which the government interests itself. Further, there is the Federal Board for Vocational Education, which distributes more subsidies under the Smith-Hughes Act and makes more investigations. It has a good deal of power. I might mention others, but these are the most conspicuous and they will serve by way of illustration.

Now is the service that we get from those several agencies sufficient and is that sort of organization satisfactory? I think the answer of the educational profession has been emphatically "No" to both of these questions. That kind of service is not sufficient and certainly the organization is very far from satisfactory. The profession is not animated by a fanatical desire to federalize everything. Its leaders are not mere Utopians who think that if they can get money out of the government they can overnight improve the educational enterprise of the country. They are dissatisfied because the thing the government has already set out to do is done so badly and inadequately.

WHAT IS WANTED FROM THE GOVERNMENT

I think it is fair to say that the profession—all of the profession and a good share of the lay public as well—now want from the Federal Government three things that are certainly not provided. The first thing they want is coördination of the government's own effort in this field. They want to have these several offices at least on speaking terms with one another and at the moment they have absolutely no relation to one another. No one of them knows what the other is doing. They carry on their activities as if they were in different countries and often the suggestions and instructions emanating from them are mutually conflicting. If the government is going to spend a good many millions of dollars a year on education, as it now does, then the profession and the understanding lay public want to see the governmental enterprise better organized. We want some scheme of consolidation.

The second thing we want is provision for carrying on large scale investigations of educational questions. In the end, all our principal educational problems become national problems. There is a constant reference upward out of the sphere of local inquiry until the great questions have to be studied nationally. We have no facilities whatever at the moment that are commonly within reach of the members of the public or of the profession for getting our great problems studied. What do we do now if we have an important question that we wish to have investigated, a question that affects the country as a whole? We go to the educational foundations and beg for a subsidy. Practically all of the important educational problems of the last ten years that have been studied nationally have been studied under grants from the Carnegie Corporation, or the General Educational Board, or the Commonwealth Fund, or some other educational foundation. These studies are all very expensive. Their cost is likely to run from $50,000 to $200,000. They require an expert personnel which has to be assembled for the purpose. It is a tremendous piece of work for the profession to get one of these national investigations launched and get it completed. In view of these difficulties and of the importance of such studies, we desire an agency to which the profession can turn, that the profession in a sense owns, to perform these great national tasks as they present themselves.

Let me cite a few examples of the kind of studies I have in mind. Immediately after the war with the change in the purchasing power of the dollar, probably the most pressing problem for schools was the financial problem. What should we do about it; on what level must the schools be supported in order to live, with this wholly different economic base? Finally the American Council on Education got $200,000 from four different foundations and set a commission to work on that task and the Educational Finance Inquiry was made. There was a good deal more delay than there should have been and the auspices, although as suitable and effective as any, were certainly no better than would have been a proper government agency. Again, every time the N.E.A. comes together it discusses the curriculum. The curriculum question is a national question. We have no means either of investigating it nationally or of bringing together and distributing nationally the results of local investigations.

The third thing that I think both the educational group and the lay public desire from the Federal Government is leadership. That is a little more difficult to define. As we know, leadership is where you find it. It resides in human beings and not in bureaus or institutions. But when a great national study is made only half the task is done. It has to be interpreted. It has to be made to tell or else its influence is certainly cut in half. What some of us would like to have connected with the government in the field of education is a kind of personal leadership which will make as effective as possible the scientific investigations which the government carries on. Occasionally we have secured such leadership in the United States Bureau of Education. Leaving recent history wholly out of account and simply citing the past, such leadership was there when William T. Harris was Commissioner of Education. What some of us would like, then, is to have a national agency set up that would appeal to a William T. Harris, if we could find another one, as a worthwhile post from which to exercise his great talent.

Now, can these things be secured without a dangerous extension of Federal authority in this field, without real Federal control? I think they can. I think that if the earnest promoters of the Smith-Towner Bill and some of its successors had shown a little more sweet reasonableness at different times, we should have had these things already, because the objection to the Smith-Towner Bill and the Towner-Sterling Bill and the others, was that those measures carried with them inevitable control through the large subsidy features. One may dogmatize about this as much as he likes, but it is the history of the government that, if continuing subsidies are dealt out, the office that deals them out also has coercive power.

HOPEFUL SIGNS

There have been several propositions before the Congress that would give us what we desire without the dangers of control. For instance, a consolidation inside of some existing department of at least two of the existing education offices, namely, the Bureau of Education and the Federal Board of Vocational Education, and the setting up of machinery for working relationships between the consolidated offices and all other offices of the government that deal with education would probably accomplish the ends the educational profession has in view. Such a proposal appeared a few years ago. It was known as the Dallinger Bill. It seemed to me to have very considerable merits.

There is also another promising possibility. The report of the Committee on Government Reorganization, filed two or three years ago, provided for a regrouping of services in the several departments and the creation of one new department by assembling different services that belong together and are now located in different government agencies. The new department was to be called the Department of Education and Relief or Education and Welfare. That plan would have given us both the service and the leadership that I have been advocating.

Finally, I think that the last measure before Congress proposed by the educational people themselves, creating a separate Department of Education, without any subsidy feature, providing also for a consolidation of the government's educational enterprises, and strictly limiting the functions of the department to research and publicity, would furnish what some of us believe to be necessary. I am persuaded that the operation of such a department would be attended by no invasion of the educational autonomy of the states.

I agree with those who fear the encroachment of Federal authority. But let us make no mistake; there is eventually going to be a large extension of Federal influence in education. The obligation both of the profession and of the lay public is to make sure that the legislation which provides for this extension shall strictly define the new government agency, whatever it be, so that it will exercise just those functions that have proved to be profitable to the interests concerned, and that it shall have no powers whatever to control education throughout the country.

Federal Subsidies for Education

By Austin F. Macdonald, Ph.D.
University of Pennsylvania

DURING the last fifteen years Congress has worked out the details of a system of grants or subsidies from the Federal treasury to the states, which has enabled the Federal Government to exercise a considerable measure of supervision over matters not mentioned in the Constitution, and, therefore, presumably left in the hands of the states. Seven large grants and a number of smaller ones of this type are now made regularly from the Federal treasury to the state governments, with total congressional appropriations exceeding $125,000,000 annually. Four of these are for purposes which may be definitely labeled as educational. They are:

(1) the Smith-Lever Act of 1914, which provides for agricultural extension work;
(2) the Smith-Hughes Act of 1917, establishing what has become a nationwide system of vocational education;
(3) the Fess-Kenyon Act of 1920, providing for the training and placement in industry of physically handicapped persons;
(4) the Sheppard-Towner Act of 1921, which provides for instructing mothers, present and prospective, in the care of their babies.

The Acts providing for the establishment of the agricultural colleges and the agricultural experiment stations should properly be omitted from the list because they contain practically no provision for Federal supervision.

FEATURES IN COMMON

All the recent subsidy laws have certain features in common. First, they provide for the payment of money from the Federal treasury to the states. Second, they make these grants to the states on the basis, generally speaking, of population. Third, the money paid from the Federal treasury is paid to the states conditionally. Certain stipulations must be met before the states are entitled to receive Federal funds. These conditions are: (1) acceptance of the act by the state legislature, which involves setting up within the state an adequate administrative agency; (2) the matching of Federal funds. Every state is required to put up a dollar of its own money for every dollar it receives from the Federal Government. This feature of Federal aid has led some to dub it the "fifty-fifty system." (3) The state administering agency is required to submit detailed plans of its activities, which must be approved by the Federal bureau in charge. In each case the work is done in the state by state officials, but with a certain amount of Federal supervision.

Remarkable progress has been made under the various subsidy laws. The history of Federal aid is a story of transformed agriculture; of vocational schools with thousands of students in states which formerly did not have a single course in vocational training; of hopelessly disabled cripples, transformed into happy, independent wage earners; of states which for the first time are giving their mothers an opportunity to find a solution for the problems of motherhood, and offering their babies for the first time a real chance for life. Few of the people who oppose Federal subsidies maintain that the work is being improperly done, or that it is unnecessary.

OBJECTIONS RAISED

There are some exceptions, of course. Just a few months ago former Governor "Jim" Ferguson of Texas took a fling at the Children's Bureau. "It is supposed to teach Texas mothers how to have babies," he cried, "in spite of the fact that the mothers of this state have made a success of having babies for over a hundred years." One is reminded of the story of the trained welfare worker who went to visit a mother of the slums. The woman became quite irritated. "So you're tryin' to teach me how to raise children," she said, "me that has buried seven."

Most of the opponents of the Federal subsidy system, however, take their stand on very different ground from Mr. Ferguson. They advance five main objections to Federal aid, with a great many variations. One is that these various functions are purely local in their scope, and that their solution is a problem for the states, and not the Federal Government. But when problems exist whose effects extend to the uttermost parts of the nation, it is difficult to believe that their solution rests entirely with the local communities.

Is education, whether it be vocational training for high school students, better knowledge of crops for farmers, better knowledge of babies for mothers, or better knowledge of their economic potentialities for the physically handicapped, purely a local problem? That question was well answered by John W. Abercrombie, Alabama State Superintendent of Education, when he said:

> Already over twenty millions of our people are residing in states other than those in which they were born, and it is no longer possible to permit a child to grow into citizenship in ignorance anywhere without endangering every other citizen everywhere.

Another objection frequently made to Federal subsidies is that they are stifling local initiative, and that the people are sitting back in complacent indifference. Such a statement is manifestly absurd. Competent and impartial observers in every state of the Union add the weight of their testimony to the vast mass of statistical data that without Federal funds most of the states would never even have attempted problems they are solving to-day. When the records show four or five states carrying on the work of civilian rehabilitation or child hygiene in 1918 or 1920, and forty or forty-five doing it in 1926, largely with state funds and entirely through state officials, it is difficult to believe that local initiative is being stifled and that local responsibilities are being shirked.

COURT DECISION

Three years ago the Supreme Court of the United States settled definitely the constitutionality of the Federal subsidy system. The twin cases of *Massachusetts* v. *Mellon* and *Frothingham* v. *Mellon*, brought to determine the constitutionality of Federal aid, were dismissed for want of jurisdiction; but the Court, speaking through Mr. Justice Sutherland, went on to make a number of observations which, though in the nature of *obiter dicta*, are highly illuminating. Said the Court:

> Probably it would be sufficient to point out that the powers of the states are not invaded, since the statute imposes no obligation, but simply extends an option which the state is free to accept or reject. . . . But we do not rest here. What burden is imposed upon the states, unequally or otherwise? Certainly there is none, unless it be the burden of taxation, and that falls upon their inhabitants, who are within the taxing power of Congress as well as that of the states where they reside. Nor does the statute require the states to do or yield anything. If Congress enacted it

> with the ulterior purpose of tempting them to yield, that purpose may be effectively frustrated by the simple expedient of not yielding.

Clear, straightforward language, direct and to the point. Yet that decision was handed down in 1923, and two years later Governor Ritchie of Maryland declared:

> It simply cannot be argued that the Federal Government has any right to use Federal funds as a means of acquiring a control over local state purposes, which under the Constitution is not granted to the government but is reserved to the states. That, under our present Constitution, is simply indefensible.

Apparently not even the Supreme Court of the United States is able to convince the opponents of Federal aid that it is constitutional.

WHAT THE STATES THINK

Another argument frequently raised against Federal aid is that it is paternalistic, that it tends to create a uniform mould into which all state administration must be cast; in other words, that it serves as an excuse for Federal officials to cram Federal policies down the throats of the states. Nothing is further from the truth than charges of Federal domination. The domination consists of a three- or four-day visit, once a year, by some Federal official to each state, supplemented by a searching scrutiny of the state's accounts, and a most careful examination of the plans submitted by the state. In each case the plan of activities is prepared by the state itself through its own officials, and varies with their concept of their state's needs. The Federal supervising bureaus have nothing more than a sort of veto power and they are careful to exercise that power with the very greatest infrequency. This summer I talked or corresponded with one hundred and forty-nine of the state officials administering the various subsidy laws for education. I missed only twenty-nine. These are the men and women who are "suffering" from Federal bureaucracy, whose intimate knowledge of local conditions is being ignored, we are told, by ruthless Federal officials. And every one of the one hundred and forty-nine, with not a single exception, declared in the strongest possible manner that there was no thought or question of Federal domination, and that Federal co-operation had been kindly and helpful in the extreme. Most of them went on to say that without the stimulus of Federal funds their state programs would not have reached the point where they are to-day for the next fifty years. If that be domination, then the more domination, the better.

SUPPLYING AID WHERE NEEDED

Perhaps the most potent argument of the opponents of the Federal subsidy system is that it is economically unsound, because it results in a transference of wealth from the richer to the poorer states. Federal revenues are derived primarily, of course, from the wealthier states, while Federal subsidies are paid out, generally speaking, on the basis of population. The result is that some states get back far more than they pay in while others receive far less. Tables have been worked out by the distinguished Governor of Maryland to show that some states are receiving in Federal subsidies less than one per cent of the amount they contribute to the Federal treasury in the form of income taxes, while others are receiving anywhere from 100 to 300 per cent. Such tables are obviously misleading. They credit to New York State, for example, the amount of the income taxes paid in by the Union Pacific and the Southern Pacific railroads, which do not have a single mile of track east of the Mississippi River. Likewise they credit to New York the entire income tax paid by the United States Steel Corporation, which has more stockholders in Pennsylvania than it has in the Empire State. If the total wealth of the several states, or their total current income, or some combination of the two, were used as the basis of comparison, the results would be quite different. The disparities would be just about one-fourth as striking. Whatever the method of computation, however, it is obvious that Federal subsidies are not distributed among the several states in proportion as they contribute to the support of the Federal Government. There seems to be no good reason why they should be. Probably it has never been suggested[1] that river and harbor appropriations or Federal post offices should be proportioned to the share of Federal taxation borne by each state. Now that such questions are being raised, they should be met squarely. Are we prepared to ignore the striking differences in the ability of the several states to support education, requiring each state to work out its own salvation—or condemnation? We compel the rich man, even though he be childless, or though he chooses to send his children to private school, to contribute to the support of the public school system. Are we going to permit the wealthier states to neglect their responsibility for the establishment of at least a national minimum of educational opportunity in this country? Or shall we recognize frankly that the Federal subsidy system brings to the poorer states a measure of financial relief, and that it brings to all the states a stimulus and a leadership that could come from no other source than the Federal Government?

State and Federal Jurisdiction in Education

By Charles R. Mann, Ph.D.

Director, American Council of Education

WITH regard to the question of the Federal Department of Education and its relation to the states there has been active discussion for the past eight years. Up to date, nothing practical has happened in the way of a change of the Federal office or offices and the creation of a new department. We cannot, however, regard the eight years as wasted on that account, because we must remember that in a democracy success is not measured by the objective achievements always, but rather by the growth of the people. No one who has followed the argument for the past eight years can deny that people have grown in understanding of this problem enormously. Therefore, it has been enormously worth while. The important thing is to note the direction of that growth and the rate at which it is taking place.

This discussion has had certain obvious benefits in ridding the majority of those who have taken part in it of several obvious fallacies. I think the majority of us, certainly more than half of us, are convinced of the fallacy of the fifty-fifty subsidies. I am sure that the state legislatures have learned that they are not getting something for nothing on a fifty-fifty subsidy from the Federal Government. I am sure that the Federal Government and Congress have learned that that fifty-fifty subsidy really does carry control, although really on the face it would seem not to do so. Hence, one of the advantages that has come from this discussion is the exposure on a wide scale of the fallacy of the fifty-fifty subsidy.

Another of the very perplexing problems that has become clearer is the relation between wealth and the support of schools in a state. We all know offhand that there are vast differences in the wealth of the different states and in their ability to support schools. But these figures concerning taxable wealth are extraordinarily misleading because there are no uniform tax laws in the states, and because the definition of what constitutes taxable wealth is not clearly understood. You all recall that a few years ago North Carolina made a re-assessment of state property for tax purposes, and when the re-assessment was finished, North Carolina's taxable wealth was four times what it previously was. Nothing had been changed in North Carolina except figures in books. That sort of uncertainty in the taxable wealth figures makes them very elusive in dealing with this problem.

It is interesting to note in passing that in all these lists we have seen, Mississippi is somewhere near if not at the bottom. Yet every one who knows Mississippi knows that during the last ten years it has made very notable progress in the development of a consolidated rural school system of its own, at its own expense. These taxable wealth figures you see fail to take account of the unused energy of the people which can be liberated without money and without price in an educational enterprise that grips them. That is what happened in Mississippi.

Another exploded fallacy is the assumption that equal educational opportunities are secured by equal expenditures of money. It has been implied in many of the arguments that in order to secure equal educational opportunities, with which I am heartily in sympathy, you must spend approximately the same amount of money per child. The relation between per capita cost of education and educational opportunity is again very obscure, and we are in great danger of going wrong if we lay too much weight on figures. These are some of the fallacies, or some of the questionable beguiling points, which have led us astray in the past, and on which we are becoming much more clear.

FACING A NEW SITUATION

In education we are at present faced by a totally new situation which has been developing so rapidly that few of us have grasped its significance. This new situation has been brought about by the war, by our great industrial growth, and by the opening up of our international relations. The thing to do now in facing this question of Federal relation in education is to try to make an estimate of the new situation and in the light of that estimate to make a plan as to what ought to be done. I would like to take up the question from that point of view.

In this new situation it seems to me that there are three very significant and outstanding features. The first of these is a change in the nature of public demand on the schools. This change has been going on gradually for a great many years. But the war crystallized opinion. It seems to me that the public is now demanding of the schools that they discover the capacities and abilities of each child and provide means for their maximum development. In prewar days schools had fixed curricula, and children were sent into these fixed curricula and were judged to be more or less failures if they did not conform. That idea has rather disappeared to-day. The fundamental demand of the public on public education is that somehow it find out or discover or cause the child to reveal to himself his own capacity and then provide methods for developing that capacity to the maximum. That demand presents a new problem for the schools.

If the schools are going to make good in solving that problem, it requires a large amount of experimentation. New devices, new methods of discovering ability, new methods of developing ability are required. This experimentation, which has been going on very markedly since the war, has led to the recognition of the fact that real control in school progress does not lie in the school authorities or in the state legislature or in the Federal Government. Real control lies in the facts which are discovered by means of this experimentation. Therefore, the second important feature in the present new situation is the rapidly growing conviction that facts control education. While governments control the administration of education, the actual processes of it are controlled by facts. An administrative system that operates in accordance with the facts makes the maximum success of the school system.

The third important feature of the new situation is that in this process of experimentation in order to discover facts it has been necessary to develop co-operation among large units. Statistical studies that lead to reliable facts require the compilation of data from a large number of cases. Very few school systems have enough cases. Therefore, there has developed a technique of co-operation among school units by which enough data are assembled to justify sound conclusions. The three factors that stand out in the present educational situation are: first, public demand for discovering ability and giving it opportunity to grow; second, experimental study, which is leading to the conclusion that facts really control education; and third, the technique of co-operation which has developed for the purpose of enabling us to discover the facts which are really significant.

This situation is not peculiar to education. The same development is going on in the industrial world. Industry has made marvelous progress through invention and scientific study, but it is now coming to realize that the greatest opportunity for further development lies in releasing pent up human energy by discovering what a man can do best and giving him opportunity to grow. Industry and business are absorbing this new idea. They are making experiments and developing co-operative methods whereby they can compare results and make progress together. That being the situation, what can we in America do to hasten the rate of development? Those three factors determine the direction in which the progress is taking place. What can be done to accelerate progress? In particular, with reference to the subject of extension of Federal influence in education, what can the Federal Government do?

WHAT IS THE FEDERAL GOVERNMENT?

In order to answer this question it is necessary first to get a clear conception of what the Federal Government really is. There is a great deal of confusion with regard to the fundamental question as to where sovereignty rests in this country. In a debate recently one man said that we have a double sovereignty—national government and state government. That shows the confusion. Of course a double sovereignty is impossible. You cannot serve two masters. The complete statement of wheresover sovereignty rests has been given us by Dr. Judson in his recent book on *Our Federal Republic*, where he points out that each state is not sovereign within its own domain, nor does the sovereignty of the nation rest in the Federal Government. Sovereignty rests in the United States acting by a majority of three-fourths of the states. Therefore the Federal Government is not a government in the ordinary sense. It is an agent of this sovereign power, and therefore it is not a final authority but only acts as an agency of the sovereign power in matters delegated to it. Now that we recognize this fact, the idea of Federal control in education takes on a different aspect, because the Federal agency called the government in Washington has no more authority than is granted it by the sovereign United States acting by a three-fourths majority.

Now the thing that is needed, or the thing which this sovereign power might require the Federal Government to establish, seems to me to have been already described by Dr. Capen in his article.[1] It is a thing the states and individual communities need for their intelligent guidance. That is an agency which is competent to gather reliable facts and to disseminate them throughout the country. Such an agency would satisfy the demand of the situation for the facts that control education. Such a federal office is necessarily out of politics, because politics is finding more and more that it is helpless against facts, if the facts are reliable and well presented and derived on a large enough scale. Therefore, if the sovereign states request the Federal Government to establish such a fact-finding agency, there is little danger of it coming into politics if it remains true to its function. The danger is becoming less and less every year as the recognition that facts control education expands.

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[1] See p. 97.

If that is the nature of a Federal education office demanded by the present situation, it seems to me to be immaterial whether it is a bureau or a department. Its merit and success will depend upon the quality of work. There is a slight preponderance in favor of making it a department at the present time, because the budget arrangements in Washington are such that it is very difficult for a bureau to get adequate financial support. A department has direct access to the chief of the budget and can secure financial support more easily. But as a matter of achieving its function in education, it seems to me it is immaterial whether it is organized as a department or bureau. I am ready to leave that question entirely to Congress.

From all of this it appears that the present situation is most encouraging. This development, both in industry and education, of reliance upon facts in guiding action throughout the country is directed away from further centralization of authority or administrative function in Washington. I think my readers will agree that the greatest danger at the present time to American democracy is this tendency to let Uncle Sam do everything. This process now going on in education and industry is a direct antidote to the centralizing tendency. Co-operation and experimentation in finding facts operate to liberate local initiative and to stimulate local responsibility, and not to vest greater power in the Federal Government.

IN CONCLUSION

In conclusion, the question as to the jurisdiction of the states and the Federal Government in the matter of education may be concisely answered as follows: The individual states obviously have jurisdiction over their own education, if by jurisdiction you mean the administrative authority and the responsibility for the operation of educational systems. But final control of education lies in facts derived from experiments and experience in trying to meet the new public demands. The Federal Government, or Federal organization, can do its part in developing the educational system of the country by establishing a suitable and adequate fact-finding and fact-disseminating office, which will have influence and a stimulating effect upon the general development that is going on, but which will have no power in the sense of authority and no control.

The Dilemma of Giant Power Regulation

By John H. Gray
Washington, D. C.

NOTHING need be said here about the importance of power. Power is the very life of all industry. It is probable that electric power will mean more to the coming centuries immediately before us than steam meant to the 19th century. The necessity for regulation of industries which are affected by a public interest is thoroughly established in our minds and a fundamental part of our legal system. This doctrine was thoroughly embodied in our law by the Supreme Court in the famous case of *Munn* v. *Illinois*, in 1876. That decision declared the power a legislative power under our Constitution and one beyond the reach of the courts. Under that decision a rate fixed by the legislature directly, or by a commission authorized by the legislature to fix rates, was beyond judicial review. But the court soon became frightened at the radical movements, and in 1894, by dragging in the Civil War amendments, meant to protect the persons and property of the emancipated slaves, and declaring a corporation a person—forgetting that, if it is a person under these amendments, it must be a person of color—the court assumed the right of judicial review of legislatively fixed rates.

Court Rulings

The court said that the right to fix or establish a rate is a legislative power, but that, in view of three provisions in the Federal Constitution requiring due process of law and the equal protection of the laws, and requiring that public property be not taken by any state for public use except upon payment of just compensation, it was the duty of the Federal courts to examine, in a properly presented case, any legislatively fixed rates, and to void them, if they were in conflict with any one of these three provisions of the Federal Constitution. So far as this point is concerned, that is the law today. It makes the regulation of rates a slow, uncertain and expensive task. For, under this ruling, where the court voids a legislative rate on constitutional grounds, it cannot establish a just and constitutional rate itself to take the place of the rate declared void, that being strictly a legislative function under our system of government and the theory of separation of governmental powers. It simply voids the rate and restrains its enforcement. Then the legislature or the commission must begin all over again. The upshot of it is that, in law, the legislature fixes rates; in practice, the court determines what rates shall be made or enforced.

But this is only the beginning of trouble with the courts. For, under our system of jurisprudence, state courts and state commissions are each limited to the territory of their own states. They have no power to examine books or to summon witnesses outside their respective states. Since the firm establishment of the right to regulate, each of the states, with a single exception, has established a state commission, and the Federal Government has three commissions; namely, the Interstate Commerce Commission, the Federal Power Commission, and a Public Utilities Commission for the District of Columbia. The particular industries placed under these commissions differ in the different state jurisdictions, but in general they include electric companies, street railways, water, gas and railroads. The power of the state courts in this field has virtually disappeared, because in case of diverse citizenship of parties nearly all cases may be taken to the Federal courts, and for this purpose a corporation is a citizen. In this day of national industry, virtually every case may be taken to a Federal court. The difficulty is increased by the fact that control under the law does not extend to non-utilities. And in this day of holding companies most of these industries are controlled by holding companies, many of them not even incorporated, and if incorporated they are usually territorially outside the jurisdiction of a state commission in any particular local utility rate case.

INTERSTATE CONTROL

So far as electricity is concerned, the Federal Government has never assumed control over it. Reasoning from analogy, however, so far as electricity is transmitted beyond the state of its generation is concerned, it is subject exclusively to Federal jurisdiction and control. This follows, in my opinion, inevitably from the decisions in natural gas cases. The Federal Government has already nominally, that is, legally, assumed control over interstate telegraph and telephone service, but not over intrastate activities in this field. Up to date, however, this control, even over the interstate activities, has remained for the most part on paper only.

With the growth of Giant Power, and holding companies in the electric field, it is plain that control cannot be effective if exercised by these two distinct sovereignties, state and national, by two different bodies, and under two sets of laws. It is entirely problematical how far the Federal Government will permit the states to go in regulating the electrical industry in the absence of Federal action. But it is plain under the commerce clause of the Constitution that the Federal Government has exclusive control of interstate transmission of electricity. When it cares to assume such control, it will interfere and prohibit any state action in this field so far as in the judgment of the Federal courts it is necessary to do so to accomplish effective control of interstate electrical matters by the Federal Government. This follows from the decisions in the Shreveport case, the Minnesota Rate case and under the Transportation Act.

In the Minnesota Rate case, 230 U. S. 433, 1913, the court said of railroads:

> If the situation has become such, by reason of the interblending of the interstate and the intrastate operations of interstate carriers, that adequate regulation of their interstate rates cannot be maintained without imposing requirements with respect to their intrastate rates, which substantially effect the former, it is for Congress to determine, within the limits of its constitutional authority over interstate commerce and its instruments, the measure of the regulation it should supply.

Acting upon this and many similar rulings in other cases, Congress in the Transportation Act of 1920 specifically authorized the Interstate Commerce Commission to fix intrastate rates wherever existing or proposed state rates interfered with or burdened interstate traffic. The Commission has acted in numerous and important instances under this provision, and such action has been sustained by the Supreme Court.

It needs no argument to show that electricity has in fact become a national industry, and is destined to become more and more so. If it is to be publicly controlled, it must be nationally controlled, under a uniform system of national laws. The diversity of citizenship and the growth of holding companies makes this inevitable. Any attempt to control the local part of the industry by one body and the interstate part by another body, each answerable to a different set of laws, and responsible to a different sovereignty, is doomed to failure. The control must be as broad as the industry and subject to uniform laws. Our experience with railroad control as well as reason teaches this.

PRESENT SITUATION

It is said that five holding companies now control forty-three per cent of the electrical industry. A single one of these companies now operates in twenty-two states and in more than twelve hundred municipalities. To show how impossible any state, or mere local control is, with its territorially limited jurisdiction, let us consider for a moment the character and method of operating of a holding company. A company is organized, incorporated, or not incorporated, and domiciled wherever it seems most advantageous to the promoters. It cannot be summoned into the jurisdiction of any state except that in which it is incorporated. If it is not incorporated it is not subject to control even by the state of its domicile. It is not necessarily an operating company or a public utility even in the state of its incorporation, if incorporated. Its affairs are practically a sealed book to all commissions or other public bodies.

It now proceeds to buy a majority of the shares of public utilities in different parts of the country and to operate the different companies each under its own name and charter. The holding company is in the eyes of the law a simple stock holder, not subject to more control than a private stock holder. The favorite way is for a single group of men to organize three separate companies, who buy the shares of many local companies in the name of one of their companies. The same small group of men, having a majority of all the shares of the local companies in ownership and control, elect themselves directors of the various local companies. They sit at one and the same table and do business in the name of all these local companies with their new holding companies of which they are also directors. When they have bought control of a given company they determine that the plant needs rebuilding. They vote as directors of this company to issue securities for this purpose. Then, still acting as directors of the given company, they make a contract with their finance company to float the necessary securities, paying such commissions and brokerage as they choose. Still acting as directors of the local company, they enter into a contract with their engineering company to rebuild the plant, again contracting with themselves, and paying such price as they choose. Again acting as directors of the local company, they enter into another contract with their new operating company to operate the plant, paying such a price as they choose. They sell securities back and forth among all the companies they control on such terms as they choose, and as often as they wish to, shift surplus or earnings from one company to another in this manner. They sell and buy coal and other material and electricity among their companies at will. For the essence of Giant Power is to pool the current and to connect all the plants with the pool and to draw from this pool as their financial desires dictate. Bear in mind that all the gains from all their contracts go to the same parties—that is, themselves—

and that they are always trading with themselves. Now, when the local company has a rate case these bare contracts may be brought before the state commission for that company has a domicile in the state of this commission and its contracts are usually open to the commission, but none of the conditions of the contract are known. The commission has no means of judging of the fairness of any of the contracts. All this is done clearly within the law. It ought to be plain to the dullest mind that with all these facilities concealment of the costs and profits of the service can be made within very wide limits, to appear exactly what the owners wish them to be. Under such a system of organization and operation with our limited territorial jurisdiction, state control is a farce.

A NATIONAL RIDDLE

Enough has been said by me to show that the electrical industry is a national industry—a highly centralized industry in its ownership and private control and management. It is also clear that greater concentration is coming and that the great holding companies are more and more acquiring a community of interest, and are connecting their plants with transmission lines that are already almost continent wide. If the industry is to be publicly controlled the holding companies must all be brought under public control and their financial organization must be greatly simplified. But no state can do this because of its territorially limited jurisdiction, for under our dual constitutional system each state as a sovereign state is limited in all of its activities to its own soil. The Federal Constitution, in addition, prevents it from interfering with Federal affairs. So far as electricity is interstate, constitutionally that is an exclusive Federal matter.

Truly we are up against a first class dilemma. The right to regulate being a police power, neither sovereignty, without a constitutional amendment, can permanently surrender its regulatory power to the other. Notwithstanding the important interstate phase of the subject, a large part of the electrical industry is preëminently local in its character. Certain it is, that neither constitutionally nor practically can the whole regulation be left to the individual states with their limited jurisdiction and their jealousy and conflicting views and policies. We must work out some system by which the strictly local matters can be dealt with by public authorities that are easily accessible, that derive their powers from the various states and are answerable to their respective states. At the same time, the strictly interstate parts of the industries must be regulated nationally, by uniform Federal laws, by Federal officials who are at the same time thoroughly familiar with the local as well as the interstate parts of the industry. Any scheme of control, if all commissioners dealing with the subject are not thoroughly informed in regard to every fact in regard to the companies with which they deal, whether that fact relates primarily to interstate or intrastate activities, will fail. An interstate body cannot expend the time and money necessary to acquire the expert knowledge of the intrastate activities for the mere sake of controlling the interstate activities.

SUGGESTIONS TOWARDS SOLVING

But three serious propositions for solving these complex problems have been made. They are:

1. To load the Interstate Commerce Commission with the interstate part of the control and leave the state commissions, as at present, in charge of the intrastate parts of the industries.

2. To provide by means of state

treaties or compacts for intersale control of the interstate parts of the industries by the state commissions with the consent of Congress, leaving the local control as at present with the state commissions.

3. To combine the whole regulation in the same body of men who shall, under suitable state and Federal legislation, act in the dual capacity as a state or a Federal commission for the territory of the state as circumstances may require.

Enough has already been said in regard to the first two propositions to show the futility of local control under our constitutional system. A nation-wide industry cannot be successfully regulated by any body whose jurisdiction does not extend throughout the whole nation.

The regulating body must have knowledge of all of the affairs of the serving company irrespective of state lines. The states can never get money enough or experts numerous enough or skilled enough, to get such knowledge. Furthermore, the Constitution forbids them to get such knowledge, even if they had the money and the experts. Every state authority the world over is limited to the territory of its own state.

The proposition to turn the interstate regulation of electricity over to the Interstate Commerce Commission is hopeless. In the first place, that commission has more duties placed upon it by existing statutes than it can possibly carry out. In the next place, the state jealousies and the controversies with state commissions would block the effective regulation of these industries by such a method. The nature of the industry would probably make difficulties here much greater than they have been in the railroad field and the difficulties of railroad control, because of these conflicts, are today after about forty years of wrestling with them almost prohibitive of effective control. This is still true, although beyond doubt the nature of the railroads makes it much easier, constitutionally, to extend Federal power over all railroads than it would be to extend the same power over the electric industry. In the case of railroads this extension has tended to kill local sentiment and, under present legislation, to increase greatly the evils of centralization and bureaucracy.

At present, the Interstate Commerce Commission is organized on a definite legal centralized system of administration and long established traditions. This is true to a degree to hamper greatly the effectiveness of regulation of the industries now under the supervision of the commission.

It would be sheer and unnecessary duplication, even if such were not the case, for the commission to try to acquire sufficient knowledge of the local phases of the electric industry to make interstate control effective. To make any control effective, the controlling persons, or officials, must have complete knowledge of the situation and of all affairs, state or interstate, of the companies with which they deal.

The proposition for state compacts seems to me impossible for various reasons. First, each of such compacts must have the formal and specific approval of Congress. While such compacts are numerous in our history, they are for the most part such as relate to boundaries and police and sanitary powers, and do not touch or directly influence larger conflicting and shifting industrial interests. From a psychological standpoint, they are virtually unknown to the public mind. But we are dealing here with a dynamic, shifting, changing industry of the first order. Most of the existing compacts settled their problems once for all, and, at most, affected two or but a few states. We have here an industry that affects all the states. If we are to deal with it by compacts, we shall find, when Giant Power is fully developed, that we should have to have individual compacts affecting many states. The jealousies of the states, worked on by rival financial interests, would certainly prevent the successful negotiation of compacts as fast as they are needed, while the same influences would prevent the approval by Congress. The rapid development of the industry might easily make the compacts antiquated, with the need of amendment, before they could be approved by Congress. Every important economic change in the interstate development of electricity would require new negotiations and new appeals to Congress. They would be harder to deal with satisfactorily than the World Court protocol. Any such method would tend to block the industry, and, in fact, to leave it unregulated. American industry, in the present state of the public mind, does not wait upon slow and tedious negotiations.

The recent experiences of New York, New Jersey and Pennsylvania in regard to such negotiations in this field, and the attempts of seven states to apportion the power to be developed in the Colorado River do not encourage us to hope for much from such compacts. Had agreements been reached, what would have been the fate of them in Congress? If they had been approved by Congress, how long would it have been before new negotiations for amendments and new appeals to Congress would have become necessary? We may easily conjecture what would become of the multitude of such negotiations and such applications to Congress after Giant Power had spread over the whole country and electric current could be sent from coast to coast.

As soon as it is proposed to turn over the interstate electrical interest to the Interstate Commerce Commission or other national body, we run against all the traditions of states' rights and various complexes. These not only stir up violent emotions and still reason, but evoke certain unformulated assumptions as the basis of opinion and agitation. The unexpressed assumption is that any national regulation necessarily means centralized, nationalized, bureaucratic, slow, expensive and arbitrary administration of the power in question. We immediately, on the basis of this assumption, hear outcries about the inefficiency and expense of bureaucratic government. Truly, for reasons already hinted at, it would be impossible for the Interstate Commerce Commission to exercise this power effectively from one office at Washington with its present centralized method of administration. The Commission is already breaking down under its present duties with its centralized administration. If any national power is to be effectively exerted, whether it is that of the Federal Judiciary, the Interstate Commerce Commission, or the Post Office, the administration, while under uniform national laws and national inspection, must be decentralized, with most of the work done locally away from Washington. Above all, it must take advantage of local knowledge, local sentiment, and local pride. It must be so arranged as to save the endless delay and expense incurred in trying to do all the work from one central office. Few private businesses are as large, or as complex, or as difficult to administer, as the three departments of government just mentioned. No large private business has ever been effectively administered, and probably never can be well managed, with as highly a centralized management as we have in these three departments of government today.

It would be as practicable, and as sensible, to try to do all the Federal judicial business of the United States from one office in Washington, without any district and circuit courts with all their judges and staffs, as it is to try to exercise essentially all the powers of the Interstate Commerce Commission from one office. But the evils of centralization would be much larger in the case of electricity than in the case of the railroads. The business is much more complex and dynamic, and much less subject to routine action.

Fortunately the logic of the situation calls for no such stupidity or for any such an attempt based on traditions, complexes and emotion rather than on reason. To recapitulate, we are apparently rapidly approaching an era when electric power will dominate our industrial life and will be generated in large central plants and distributed over high tension lines across innumerable state lines. Yet the industry is primarily of local interest, and, under our complex constitutional system, in its local phases, is subject to state and not Federal regulation. Nearly all the states have state commissions already in charge of such state regulation. These commissions have already amassed vast stores of information and a considerable degree of expertness in this field. Yet they are greatly hampered by the territorial limitations of their respective jurisdictions, and the national character of the owning and serving companies. The states are very loath to surrender any of their power, even if there was constitutional right to do so without constitutional amendments.

The industry already has interstate relations of ownership and operations of vital importance, and these are bound to increase in the near future. These phases of the industry are clearly exempt from state control or interference under the commerce clause of the Federal Constitution. Irreparable injury will result if we attempt to solve this problem of dual state and Federal control through the slow process of constitutional amendments. Neither state nor Federal control can be exercised effectively unless the persons exercising the control have complete authority to acquire, and actually do obtain, complete knowledge of the affairs, state and Federal, of the companies with which they deal. There is grave doubt whether, under present constitutional arrangements, either a state or a Federal constitution as such can be given legal authority to acquire the necessary information for exercising effective regulation within the field allotted to it. This is certainly true in regard to the state commissions. This argument leads inevitably to making the same persons at the same time state and Federal officers and agents.

Let Congress pass an act declaring that the state commissions in the respective states, for the time being, shall *ex-officio* become Federal agencies or commissions for dealing with the interstate phases of this industry. It would remain for the individual states to accept or reject this burden. It could not be forced by Congress on any state against its will.

Provision should, therefore, be made to lodge this power in the hands of the Interstate Commerce Commission where any state did not have a commission, or when the state refused to accept the power offered it by Congress. It could easily be provided that, in interstate relations where more than one state in a given instance was affected, the commissions of the states affected should for this particular case sit together as a joint or single commission.

Such an act would show such respect for the rights of the states and even for their sentiments and traditions, as would probably cause every state voluntarily to accept the act. It might even induce the only state now without a state commission to create a commission in order to protect its rights and take advantage of this act. There is little doubt, in my mind, that such legislation would so increase the dignity and prestige of the state commissions as to increase the grade of their personnel. Provision should also be made for a limited appeal to the Interstate Commerce Commission in the more important cases. But this right of appeal should be much more restricted than in the case of Federal courts. The present relation of the different divisions of the Interstate Commerce Commission furnishes a model for fixing the right of appeal from one of these Federal agencies acting within a given state to the Interstate Commerce Commission.

The present governmental arrangements in the District of Columbia, where the same three men act as commissioners for the District and also sit in a different capacity as public utility commissioners for the District, suggest the dual capacity for state commissioners as proposed here.

This arrangement would doubtless raise the grade of the personnel of the state commissions and increase the expertness of the members to a degree that would lessen very greatly the number of cases appealed to the courts. This would probably speed up the work and make all regulations, both state and Federal, much more effective. Every case, state or Federal, would be in the hands of men having complete power over all the companies, because they would have complete knowledge of all the companies coming before them in any case.

Regulation being an administrative and expert job, court review should be reduced to the lowest possible constitutional limits. With the increased standing and expert knowledge of commissioners, the courts would not only have fewer cases to deal with, but judges would probably come to have very much more respect for the decision of commissioners, and consequently would be much less inclined to reverse them. This would tend to put regulation in the hands of persons best qualified to exercise it and would add enormously to its effectiveness. Under such a system cases would be decided much more quickly, cheaply and equitably than at present.

The Concentration of Control in Power

By H. S. Raushenbush

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IN the field of public control of power several factors have, within the last years, challenged the adequacy of the agencies we have set up to deal with our public utility industries.

Some Challenging Factors

(1) The very size of the industry is one of these factors. Some of our public service commissions are devoting as much as three quarters of their time to the power industry on the basis of their old appropriations. In most states the Commissioners have small budgets with which they must not only handle the other utilities but meet interests with capitalizations running into the hundred millions, and follow to some extent at least all their moves in the line of intercompany contracts and mergers.

(2) These companies have in recent years been doing a land office business in acquiring each other and developing systems which in some cases have solid technical and geographical foundations and in others seem simply to be a combination of any properties which could be bought. The Northeastern is a sample of the former. The North American and Cities Service of the latter. The Cities Service has properties as widely separated as Washington and Connecticut, Canada and Oklahoma. The integration of the superpower systems spreading throughout the country not only have careful planning behind them, they have several careful and often competitive plannings behind them.

To meet the curious exigencies of various state laws and to take the due advantage which is sure to accompany creative initiative in the field of business and financing quite as much as in the field of the arts and letters, they have built for themselves a series of holding companies, which not only gather the profits of the operating companies in a less conspicuous manner than one such company could do, but raise a series of problems for the serious minded intending investors, and also for the consumer of light and power, for whom the state regulatory commissions are authorized to speak.

This challenge is, in the main, yet to be made explicit. We have met it before in the case of street railways which often held one company, in a suburb possibly, which was running at a loss, while the company in the city could still carry on at the old rates. The plea then was to consider the system as a whole, so as not to raise rates in the suburb. Some commissions have allowed this recognition of the holding company. Others have not, or not yet. Investigation of some of the financial set-ups in the power field, of some of the prices being paid for operating companies these days, leads to the conclusion that the power companies are expecting one or possibly both of two things: permission to function as a system, with recognition of the increased values of the system over the sum total of its parts (a non-Euclidean case, where the whole is more than equal to the sum of all its parts), or a decided decrease in the cost of power.

(3) A third factor changing the situation somewhat from its former

appearance is the growth of interstate business, a matter which at present is not under any public control where power is wholesaled across state lines. While the volume of such energy may never be more than a small fraction of the total energy generated, its importance to the general question of public utility regulation may be much greater than its ratio to the total.

The concentration of financial control in a few hands and the consequences of that are things to which we still have to become accustomed. We are watching an unchecked centralization of industrial control, accompanied by a very definite and purposive campaign for decentralization of both state and Federal control. This plea for decentralization is made under several names, one of which is "economy," and as a nation we are showing the good French characteristic of paying indirect taxes with good grace while objecting strenuously and effectively to direct taxes.

In the power industry with its spectacular engineering a good many financial doubts have gone down with open-mouthed admiration at massive powerhouses and long distance transmission. I believe that there is high authority for attributing our whole American wage level to the efforts of our electrical engineers. Certainly these have done more to carry the Rooseveltian anti-trust movement on their shoulders to its grave than the power financiers have done. Some idea of the size can be obtained from the fact that seven and a half billion dollars is now invested in the industry, and that within the last calendar year two billion dollars' worth of properties were involved in mergers and regroupings.

WHERE CONTROL IS VESTED

Five holding companies control very definitely 24,350 million Kwh., approximately 40.8 per cent of the central station output. First among these seems to be the Northeastern with eleven per cent of the total central station production. The companies under the supervision of the Electric Board and Share rank second with nine per cent; the Insull interests third with 8.7 per cent. Then come in order the North American (7.1 per cent) the Standard Gas and Electric (5 per cent).

The eight next largest companies control another 15,061 million Kwh. or 25.2 per cent of the total. These are the Southeastern Power and Light (4.4 per cent), the Edison United Companies of New York (3.7 per cent), the American Waterworks and Electric (3.7 per cent), the Pacific Gas and Electric (3.3 per cent), the Southern California Edison (3.3 per cent), the Public Service Gas and Electric (2.2 per cent) the Cities Service (2.1 per cent) and the Stone and Webster interests (2.1 per cent).

These thirteen companies have a direct control of sixty-six per cent of the total, and are further often connected among themselves in many ways, which would allow some of them to be considered as working identities of interest.

The Electric Bond and Share (which is a company co-equal with the General Electric, consisting of essentially the same stockholders, but having since 1924 a board of directors which does not interlock with the board of the General Electric) is financially interested in six of the parent or subsidiary companies of the other large interests as well as in companies not falling under their controls. Together with the General Electric it probably has an influence of some sort on over half of the power industry. Its revenues are derived from four main sources: (1) fees for financing the companies and marketing their securities; (2) for supervising operating agreements on a stipulating basis; (3) for designing and building operating units; and (4) in dividends and interest from the securities of its supervised and associated companies. They stretch over thirty-three states. The Electric Bond and Share also has interests in five foreign countries through the American and Foreign Power Company, which it controls. The total capitalization of its owned and supervised interests has recently been put at one billion dollars.

The spheres of influence of some of the large holding companies are wider than their stock controls indicate. When stock is widely held, a good deal less than fifty-one per cent is necessary for control. Professor Ripley has stated recently in connection with power securities that "with 300,000 scattered holdings, fifteen and twenty per cent of the votes cannot be outmatched at an election."

The advantages claimed for the holding company are: (1) greater efficiency of operation, and consequent lower costs to the consumers; (2) cheaper financing of plants, additions and improvements. The proof of these puddings is in the fact that retail lighting rates throughout the country have gone down 6.25 per cent in the last six years.

This would not be so overwhelmingly impressive a price drop, even in a competitive industry which had been growing into the large-scale industry class as rapidly as the power industry has done. During these last six years production has increased fifty per cent, gross revenues sixty-six per cent and the operating ratio has gone down from its July peaks of 65.9 per cent in 1920 to 52.1 per cent last year. During this period the amount of coal used per Kwh. was reduced one-third from 3.2 pounds to 2.1 pounds. Large scale production and increased technical efficiency would at first blush seem to have been the main factors making for the rate reduction, slight as it was. Certainly much of the credit the holding companies take to themselves is that of shining in reflected glory. Certainly they are not responsible for *all* the tie-ins and power exchanges, most of all not when their interests are separated from each other by the width of several states.

Professor Dewing has taken twelve typical holding companies and shown that of their holdings fifteen per cent was in their subsidiaries' bonds, fourteen per cent in their preferred stock and seventy-one per cent in their common stock. Nearly three-fourths of their assets, in other words, represent a claim on earnings only after bonds and preferred stocks have received their share of the income. On top of these the twelve holding companies issued twenty-five per cent bonds, thirty-two per cent preferred and forty-three per cent common. In other words, the dividends from a large part of the common stock of the subsidiaries held by the holding companies have been transformed for all practical purposes from a contingent to a fixed charge. Some parent companies, like the Northeastern, have no funded debt and attempt to make capital out of that fact, in spite of the fact that all the bonds of their subsidiary corporations must be taken care of before the parent company stock can receive a penny. Professor Ripley in the November *Atlantic* has pointed out the danger of this pyramiding: that when the operating subsidiary has mortgaged fifty per cent of its income, a ten per cent drop in its earnings will cut the return available for its common and for the parent company one-fifth, and that when the subsidiary has mortgaged eighty per cent of its income, a drop of ten per cent in the net will cut the dividends payable to the holding corporation in half.

The fact that this system works in the other way has accounted for the tremendous prosperity of the holding companies. An increase of ten per cent in the earnings of an operating subsidiary fifty per cent mortgaged will increase by twenty per cent the earnings of the company which holds all its common.

These, however, are matters which, at the moment at least, interest us as investors more than as consumers, except insofar as they indicate a large prosperity among the operating companies. In spite of the desires of a group of the Investment Bankers' Association for a unified, possibly Federal, control of security issues, the chances are that, in spite of the essentially investment banking function of the holding companies, control over their issues will come later than more rigorous control of the operating companies will come. The theory of protection to consumers in non-competitive industries is much more strongly entrenched than that of protection to investors.

EFFECTS ON OPERATING COMPANIES

There are, however, two ways in which holding company financing affects the operating companies, and it is with these that we are more immediately concerned. The first of these is that highly imaginative holding company financing, such, for example, as has been exhibited by the United Light and Power, will, unless all presidents follow Mr. Hulswit's example and donate a million of their own to their company after its crash, lower the rate at which their bonds and stocks can be put on the market. That this will affect the rate at which the securities of the operating companies can be marketed seems to me unquestionable. The second way is to some extent *in futuro* as yet, but people in the industry seem to give it a very present measure of recognition. It is the attempt, which may be expected, for the overcapitalization of the operating companies on the basis of their increased efficiencies *qua* parts of a large system and on the basis of their sales price to the holding companies. This is surely a look ahead, but that a very serious attempt along this line is in the cards I do not doubt.

President Ferguson of the Hartford Electric Light certainly foresaw overcapitalization of his operating company when he reported a refusal to join in the Northeastern merger in the words:

> Directors are fully cognizant of the tendency toward mergers and consolidations which has prevailed in the industry during the past year, but none of the suggestions or proposals made to date would seem to offer any material advantage to the stockholders to offset the *higher price of current to them and to the public* which must result from the recapitalization of the company on a much larger scale by a possible purchaser if the sale were to be effected at or above the present market prices.

The same fact was certainly in the mind of the Advisory Committee of the Narragansett Electric Light when it said, in connection with the proposed sale of that company to the United Electric Power, that the recent history of our public utilities has shown that the control of an extensive electric light and power system is regarded as having a large value aside from the intrinsic values of the properties involved, and that very large prices have been paid for a controlling interest in such systems. Regarding the effect of the plan for merger on the stockholders as *purchasers and users* of electric light and power, the Committee contrasted the earnings now required by the Narragansett Company for its dividends and the amount that would be necessary to meet the dividends and interest requirements of the new capitalization. Dividend payments made by the Narragansett amount to $1,880,000 and

> Under the proposed merger the interest and dividends, which the plan contemplates shall be paid, amount to over $3,300,000, an increase of over 75%. This tremendously increased disbursement must come from earnings and as the customers are the only source of earnings, this eventually means higher prices than otherwise necessary . . . even if rates for light and power should not be increased, it is obvious that they will not be decreased as much as they naturally would without this tremendous increase in interest and dividend requirements.

The annual savings to be effected through a combined use of the power plants are insignificant as compared with this increased dividend requirement, amounting to only about $150,000 to $200,000.

In New York State such prices, of which the Public Service Commission takes note without having control, are the rule rather than the exception.

In February of this year the Mohawk-Hudson, a holding company in a stock exchange, acquired the common of the Northern New York Utilities Company, paying $80 for $60.

The Mohawk-Hudson bought the Syracuse Lighting, a United Gas Improvement interest, paying $347 in market value for stock, with a book value of $106 and a market price some months before the sale of $265. In this case the vending company, the United Gas Improvement, held a fifteen per cent interest in the purchasing company.

Last year the Buffalo, Niagara and Eastern, a holding company which later became part of the Northeastern merger, bought the Niagara Falls Power Company, and the common stocks of the latter company, an operating company, which had a book value of $26.17 and a 1924 market high of forty-seven, rose to sixty-nine at the time of the merger and later attained a 1925 high of seventy-seven.

This twenty-two to thirty point rise in a half year for stocks of an operating company, supposedly held to an eight per cent return by our regulatory system, cast a *prima facie* evidence of doubt on the adequacy of that regulation. When we find that, due to lack of an adequate budget, the Federal Power Commission has not been able to come to any agreement with this company on the net cost of its investment and that the company in spite of a prescribed system of accounting carries an item of over thirty-two million dollars in undistributed assets on its books, there is adequate reason to believe that much more than a fair rate of return is being enjoyed, or, to put it more concisely, much more than a proper rate base is being allowed.

I am using this as an illustration of the new situation which confronts our regulatory system. This company sells to large industrial users along the Niagara frontier, some of whom hold stock in it. It wholesales to allied companies, the Buffalo General Electric among them. An allied transmission company, the Buffalo Lockport and Ontario, distributes part of its energy. The Public Service Commission, with its hands full, and its budget inadequate, with a membership not selected according to mastery of the economic and legal intricacies of valuation work, with a practice of acting only when complaints are brought, of course receives no complaints from the allied interests and does not investigate. And yet this is the largest hydro plant in the country and represents, I am told, the cheapest power this side of the

Canadian border. Here is practically an air-tight set-up.

DANGERS IN HOLDING COMPANY CONTRACTS

There are certain of our public service commissions which are convinced that the danger of increased costs or inadequately reduced costs to the consumers lies in the holding company contracts. The commissions have not had much success with the regulation of these in the telephone industry, where the American Telephone and Telegraph makes contracts with its state subsidiaries. These are essentially contracts with itself. Yet the Supreme Court has said that the local regulating board has no right to pass judgment upon the wisdom of the contract; that unless collusion can be proved, it must stand, regardless of its possible improvidence; that the local company is entitled under the constitution to earn enough to meet the terms of the contract and in addition earn enough to give a reasonable return upon all property locally employed in the industry.

The chairman of the Department of Public Utilities of Massachusetts puts this danger of the holding company line-up in the following words:

> What purpose is there in these mergers pyramiding their paper on top of the local companies? Who is to pay interest and dividends on all that paper?
>
> The only way in which it will be possible to make good these various pieces of paper the mergers are issuing is, it seems to me, through their being able to obtain valuable contracts with the distributing local companies. Contracts which will run for a long number of years; and although not apparently bearing excessive terms at the outset, at least to the public eye, yet in the process of time, they having the field, with the growth of the business and the growth in the electric industry increasing much faster than the growth of the invested capital,—by growth in the volume of business they will be able to get enough profit through these contracts to pay interest upon a lot of paper which represents practically nothing at the present time, except various good wills and theories of people that the values of these various properties are such that they ought to be allowed to issue the paper against them.

On these holding company contracts we have as yet relatively little data, only such data as the commissions themselves bring to light. The Indiana Public Service Commission, for example, recently found a contract between the Commonwealth Power Corporation (a holding company on which the American Superpower is heavily represented), and the Southern Indiana Gas and Electric, an operating company, whereby the former received ten per cent of the total cost of extensions, additions and betterments to the electric, gas heating and other properties, and two per cent of the entire gross earnings from all departments of the company. This was by way of compensation for general management and supervision service. The Commission, although granting the increase in traction rates asked by the company, denounced the contract as "simply a process of milking the patrons of the utility and obtaining an enhanced return on the investment."

In March the Michigan Public Service Commission expressed a sincere but probably futile hope, which seems to be all the satisfaction left to the commissions by the court decisions in the matter of holding company contracts. Allowing the four and a half per cent contract of the Michigan Bell with the American Telephone and Telegraph, it said:

> Although all of the operating expenses which the Supreme Court held should be allowed have been allowed because of its opinion, when and if the position of that court shall be modified, reservation is

made of the right to compel the Michigan Bell Telephone Company to disgorge any money taken under the so-called 4½ per cent contract in excess of what it shall ultimately be determined it is entitled to receive, and the right is also reserved to recover such amounts as have been taken from the public by telephone rates to pay a return on reinvested depreciation reserve, used for the purpose of earning and paying dividends thereon to its stockholders.

These holding company contracts seem to reach their finest flower in the soil of interstate business where wholesaling across state lines is completely uncontrolled. In March the Maryland Public Service Commission found that the Consolidated Gas, Electric Light and Power Company was renewing a contract for the hydro power from Holtwood, Pennsylvania, at the rate of six mills, at a time when the power was being produced at 4.9 mills in the company's own plants. The companies have several directors in common.

WHEREIN THE COMMISSIONS ARE HANDICAPPED

In other words, the hands of the commissions are fairly well tied by an arrangement which is the outstanding feature of regulation in the industry. The Michigan Commission reserves the nominal right to recapture if and when the Supreme Court changes its mind. Massachusetts goes on record that in any long-time contract between companies for the sale or exchange of electricity the approval of the Department of Public Utilities must first be obtained.

The situation is made more difficult by the decision in April of the United States Supreme Court in the appeal of the Board of Public Utility Commissions of New Jersey against the New York Telephone Company. This throws the additional onus of very quick action upon the regulatory bodies which are not quick in action. That amazing decision was to the effect that the company had a right to a fair return on its surplus earnings arising from sums contributed by consumers over and above the fair return on its rate base. The customers must pay a return not only on the "value," rather than the cost, of property bought with funds contributed by investors, but also on the "value" of property bought out of earnings.

One of the two places where a halt can be called and apparently is called on the undue charges for construction, management and sales of current by holding companies and on the constant circle of reproduction costs and values, is where the Federal Waterpower Act can be enforced. At Conowingo last winter, because the development lay partly in Maryland and partly in Pennsylvania, the Federal Power Commission in co-operation with the two state commissions was able to cut out the largest share of capitalized expectations. The project's cost was put at fifty-two million dollars. The company holding had an elaborate setup of subsidiary companies and proposed to issue, in addition to the allowed bonds and preferred stocks which completely covered this fifty-two million dollars, an additional 94,200 shares of no par common in two classes, only one of which would carry the voting power. This overissue, which is in our best utility practice elsewhere, was disallowed. Not only was the main investment held down to the net cost, but provisions were written into the various leases and contracts between the generating, transmitting and distributing companies stating expressly that subject only to unanimous agreement to alter them by the three commissions the rentals should return only seven per cent on the actual legitimate investment. But there are not many Conowingos. The bulk of the power is steam produced and the Federal Waterpower Act does not apply.

IN CONCLUSION

To sum up the situation: the public service commissions are confronting increasing complexities raveled before them by very expert gentlemen. The commissions are in many cases financially unable to do more than tackle a few parts of the problem presented to them. In some cases they do not even investigate rate bases or returns unless complaint is brought, and with subsidiaries purchasing the power, complaint is not brought directly by any consumer. Further, the courts have upheld holding company contracts; they have also allowed the vicious circle of rates and values to constantly increase the rate bases of the properties; they have allowed a return on the surplus out of earnings and have generally assumed a controlling say in the matter of regulation which holds little hope for its future unless the states insist on writing into all new charters, contracts and leases the principles of the Federal Power Act.

Federal and State Relations in the Control of Power Development and Distribution

By PHILIP P. WELLS

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MOST of the debate over the powers and duties of the Federal and state governments in dealing with our economic life beats the air in a war with shadows. It is a discussion of unrealities. The realities of this problem of power development and distribution are economic realities, but the debaters are blinded to them by phantoms from the world of politics.

Take the State of Connecticut, for example. It is only a part of southern New England, the great finishing shop of American manufacturing enterprise. Upon Connecticut's small water powers the creative ingenuity and energy of its people, generations before the age of electricity, laid the foundations of the industrial greatness of the little commonwealth. The small water powers are intensively developed but were long since outgrown. Today the chief source of the life-stream of energy for Connecticut mills is in the coal fields of Pennsylvania. The margin of undeveloped water power within the state is small.[1] So much for sources of supply. On the side of demand Connecticut today is too small a territory to be an economic unit of electric service. The mere political fact that it is a sovereign state does not overcome these handicaps in dealing freely with this new economic force. Its industrial fate depends on interstate commerce in electricity—on cheap mass production of electrical energy at sources in other states for transmission over its borders and on an integrated power pool for distribution embracing many states.

Compare Connecticut with the State of Texas—an empire in area in which we could sink a superpower system without a ripple on the borders. Or take the State of California, in which for more than a decade electric current from a water power site midway of the state north and south has been delivered near the southern border, five hundred miles away. The contrast between the California situation or the Texas situation and the situation of Connecticut, or any one of the New England States, with the possible exception of Maine, clearly shows that New Englanders, in making an issue of Federal authority against state authority for the control of power service, are not dealing with realities.

DISGUISES AND DECEPTIONS

Let us look critically at some of these phantoms. In the first place there is an underlying assumption in many minds that the relation of the state to the nation is by nature a relation of antagonism. The Fathers of the Republic knew better. They made the nation the common agent of the people of all the states. They foresaw joint and friendly action by the two parts into which they divided the sovereignty of the American people. Outstanding examples are: The provisions of the Constitution for co-operation of states and nation in organizing, arming, disciplining and governing the militia of the states; for the nation's guaranteeing to every state a republican form of government and protection against invasion and domestic violence; and for approval by Congress of interstate compacts. Our history records numerous instances of joint and friendly action of nation and state, but it remained for the Roosevelt administration, in our own time, to set forth in a proper light, as a major political principle, the idea that co-operation, not antagonism, is the proper relation of national and state power. This was forcibly brought out in the report of the Inland Waterways Commission, a report closely related to the struggle over water power. The political idea underlying the Inland Waterways Commission report, and many other acts of the Roosevelt administration dealing with natural resources, was that the state and the nation should so co-operate in their regulation of natural resource disposal that there would be no twilight zone on the borders of their authority without any public control at all. The Federal Water Power Act was built on that theory.

Moreover there is—shall I say insincerity—no, that is too strong a word —there is deception on the part of those who argue for one side or the other of this fictitious issue, and it is very often the most dangerous kind of deception, namely self-deception. The supposed issue is deceptive in two respects that I will mention here. It is supposed to coincide with the issue of centralization against decentralization in government; but, as a matter of fact, Federal activity does not necessarily mean centralization. The administration of the United States Forest Service is decentralized. The administration of the United States Reclamation Service was decentralized before its degradation was begun a dozen years ago. Most important of all, the real issue behind this debate over Federal authority and state authority, the hidden but true issue, is most often the issue of property against personality, of money against men. That is the reality which frequently lies behind this discussion. That was so with respect to the fight for the conservation of natural resources. It was especially so in the long battle over water power which ended in the Federal Water Power Act. That struggle lasted fourteen years and from the beginning to the end of it the clamor for state rights was continually raised against the proposals of the conservationists, raised in the halls of Congress, in the courts, in contests before the executive departments; but never once was it raised save in behalf of the men who demanded water power grants in perpetuity without those conditions essential for safeguarding public rights which were finally embodied in the Act. From the beginning to the end the deceptive hand was disguised in the hide of state rights, but to the understanding ear the telltale voice betrayed the would-be uncontrolled monopolist.

The same thing is true about the controversy over the Maternity Act. To some extent it is true about the controversy that is coming over blue sky laws. For example: Pennsylvania has an admirable blue sky law, admirably administered, in such a way that it has won the praise of great banking houses. Yet some very strong financial interests, instead of adopting the policy of co-operation with the states in this matter, have come out for a Federal blue sky law, and the reason is obvious —they can market their bonds better if a good law is spread all over the country than if there are many bad spots left.

The reality behind the water power controversy in particular and the electric power controversy in general is, in the last analysis, that it is a struggle over who is to get the benefits that are to come from the development of our natural resources; because of course electric power comes either from water power or from coal, with a negligible amount coming from oil and natural gas. That this is the real issue was illustrated with respect to water power in the original set-up of the Conowingo project. A clause in that set-up provided that the price to be paid for the electric current generated by water power from the Susquehanna River was to rise and fall with the price of coal. That provision was disallowed by the Federal Power Commission, but such was the proposal.

GETTING DOWN TO REALITIES

So much for the phantoms. Now let us get down to the realities. In order to keep for the people of the country—the consumers—their fair share of the benefits to be derived from these natural resources through privately owned corporations operating under public regulation, certain things have to be done, either by the Federal Government or by the state governments, and the choice of which government is to do them is a choice of expediency, to be determined in the light of the constitutional powers of those governments and of the practical situation. These things are realities. The first of them is that the amount of money upon which the constitutional right of the investor in the enterprise to a fair return is to be calculated, must be limited to the amount of money actually paid into the enterprise by the investor with reasonable prudence. That rate-base is sometimes called the "prudent investment" rate-base. In the Federal Water Power Act it is called the "net investment." This rate-base is written into the Federal Water Power Act, and the state commissions, in regulating the rates charged for electricity generated under that Act, are restricted to that base.

This is contrary to the general rule set up by the Supreme Court of the United States in the case of *Smyth* v. *Ames*, and following cases, where it was held that the rate-base was the value of the property *at the time of regulation.* That rule gives the unearned increment to the company and takes it from the consumer. That rule, without any further words, would have imposed the substance of the Conowingo coal clause upon the people of Philadelphia who are to consume the current from that project. The Federal Water Power Act saved the people of Philadelphia from that rule in that case. The Pennsylvania Water Power Act of 1923 has the same effect upon all water powers wholly within the state that are not subject to the Federal act; and a provision, inserted at the instance of the Pennsylvania commissioners in the proposed compact with New Jersey and New York governing the Delaware River, would extend this principle to the 400,000 water horse power that may hereafter be developed in that boundary stream. The Pennsylvania Giant Power bills sought to extend this principle to steam-generated electricity also.

The second reality is that, in the regulation of the security issues of power companies, the par value of the securities shall be equal to this rate-base, this net investment. That is a reality because the people—the consumers—will thereby be saved from deception; they will know what the rate-base is by simply finding out what the securities outstanding are. That rule has practically been in effect in Massachusetts for a generation. Speaking broadly, a public utility in Massachusetts cannot issue securities beyond the net investment. To a certain extent that was written into the Federal Water Power Act.

On the principle of co-operation between Federal and state governments embodied in that Act, it was provided that the general power of regulating rates, service and security issues was handed over to the state commissions as to power coming from a project developed under Federal license. But if the states neglected the job, if they did not make due provision for the exercise of that power, then and to that extent, the Federal Power Commission was to regulate. This authority had never been exercised until the Governor of Pennsylvania, because the law of this state does not give the Public Service Commission the authority to regulate the issue of securities, appealed to the Federal Power Commission and requested that the securities to be issued in connection with the Conowingo project be regulated by that Commission and be regulated on this principle. The Federal Power Commission took the action requested; so that here, too, the people of Philadelphia, who are to be the consumers, have been saved by this Federal Water Power Act from deception by inflated security issues for the Conowingo project. The proposed Giant Power legislation would have embodied this additional safeguard of the consumer's rights in the law of the state and thus would have made the exercise of Federal authority for their protection against deception unnecessary.

I have space to mention but one more of these realities, namely: A just and stable measure of the "fair return" to which the corporation is entitled by the guaranty of the Constitution. There now prevails a tendency to hit upon some percentage of the rate-base as the measure of a fair return and to apply that percentage in all cases without distinction of time or place. The rate of return tends to become fixed and inflexible as, for example, seven per cent in Pennsylvania. But it is obvious that a rate of return fair in one place or at one time may be unfair in another place or at another time. This inflexibility of the fair return standard pushed many utilities, especially street railways, to and over the edge of bankruptcy in the era of inflation after the war; while many of those which had enough to keep out of trouble then are getting too much now.

This prevailing standard of measuring the fair return robs Peter to pay Paul today and robs Paul to pay Peter tomorrow. Therefore the Pennsylvania Giant Power bills proposed to measure the fairness of the return by its effect in attracting new capital needed for the extension of the company's facilities and service. If the return fixed by the regulating commission is too small to attract that new capital it is unfair to the company. If it is larger than is necessary to attract that new capital it is unfair to the public. Therefore, under normal conditions for a well managed company, the security market gives a daily infallible answer to the question whether any proposed rate of return is or is not "fair." To that standard and to the arbitrament of the security market the American Telephone and Telegraph Company appealed for justification in raising its dividend rate from eight to nine per cent in the period of price inflation and interest inflation after the war. The increase carried the stock from slightly below to slightly above par in the market and so made possible a new stock issue at par for the financing of extensions and improvements.

STATE OR FEDERAL REGULATION?

What says expediency as to the choice of governments, Federal or state, for achieving these realities?

The authority of the Federal Government over water power is quite different from its authority when the power comes from fuel. The movement for Federal regulation of water power began in 1906 with respect to the water powers in the national forests, and in 1907 with respect to those in navigable rivers. During the controversy there was comparatively little development in navigable rivers, and the development in national forests proceeded under a law authorizing revocable permits. The result was that in this instance the stable door was locked before the horse was stolen, so that seventy-five per cent, more or less, of the water power resources of the country are subject to the Federal Water Power Act.

Where fuel is the source of power, the Federal Government is not a landlord as it is in the case of water power, except with respect to the oil and coal deposits in the Far West. In the East, in Pennsylvania and the northeastern section of the country, coal deposits are in private ownership, and therefore, as sources of power, are under state jurisdiction. The question, therefore, is: How shall the state use its jurisdiction in dealing with the realities I have discussed?

Without attempting to go into it in detail, I will say in passing that in the so-called Giant Power legislation, proposed by Governor Pinchot, the state was attempting to deal with those realities as to electric power developed from fuel on the principles upon which the Federal Government, with the approval of the industry, has dealt with them as to electricity developed from water power.

When it comes to distribution of power as opposed to its generation, we have a field of contact between Federal and state authority in the matter of interstate transmission. Undoubtedly the transmission of electric current over a state border line is interstate commerce. Under the ruling of the courts with respect to other forms of interstate commerce, which we may expect to see applied to this one, some of that commerce may be regulated by the state so long as Congress chooses to do nothing about it, but another part of it cannot be regulated by the state notwithstanding Congress chooses to do nothing about it. If the company which carries the current across the state line itself distributes that current to consumers, then the state may regulate until Congress takes over the job. But if the company which carries it across the state line delivers it to a distributing company in the receiving state, then that transaction cannot be regulated by the state, notwithstanding Congress does nothing about it. As a matter of fact Congress has done nothing about it except in the Federal Water Power Act. In that Act it has said, as to current coming from water power projects licensed under that Act, that the job of regulation is turned over to the states so far as the two states concerned can agree about it and so far as their commissions have authority, but that insofar as they cannot agree about it, or their commissions have no authority, the Federal Power Commission shall regulate. A bill introduced into the Senate by Senator Norris would extend that principle of the Federal Water Power Act to all electric current transmitted across state lines whether generated under Federal license or not. This means chiefly steam-generated current. That is, it would give to the commissions of the states concerned the duty of regulation insofar as they were authorized by their state laws and insofar as they agreed; failing which, the Federal Power Commission should regulate, as it did in the Conowingo case to which I have referred.

PROPOSED SOLUTIONS

Is there any other solution? One has been proposed. Last fall there was a negotiation entered into by the states of New York, New Jersey and Pennsylvania with a view to an interstate compact for the regulation of interstate commerce in electric power. It was contemplated that if these three states could agree upon a compact, it should be so drawn as to invite the adhesion of other states in the northeastern section of the country; and delegates from other states, including Maryland, Vermont and Massachusetts, attended some of the meetings and took part in the discussions. When it came to the pinch, New York withdrew from the negotiations and they were not renewed. However, the incident is worth mentioning here as an alternative attempted solution of this problem.

The solution was that these states, with the consent of Congress, should set up by compact an interstate commission; that this interstate commission should be given the regulation of commerce among these states in electric power, no matter whether the company carrying it across the line distributed it directly to consumers or sold it at wholesale to a distributing company in the receiving state. It was proposed, however, that each state should have the right to compel the segregation of interstate transmission from the generating and distributing businesses; also that the companies should themselves have the option of making that segregation, so as to limit the jurisdiction of this proposed new interstate commission within the narrowest terms possible.

It was also proposed to deal with the holding company in the following manner. In the first place, no holding company that was not incorporated in one of the states bound by the compact, and no officer, agent or director of such a company, was to be allowed to vote any stock in any operating company in any one of the states. It was proposed that the commission of any one of these states, confronted with the job of regulating an operating company in that state, and confronted with such a contract between the holding company and the operating company affecting the cost of electricity—that the orders of the commission for the production of books and evidence should run into all the states bound by the compact. And thereby the facts, all the facts, could be brought out as to whether it was an equitable contract or not. I merely mention this attempt to use state authority instead of Federal authority in the regulation of interstate commerce in electric power, and the different provisions of the Federal Water Power Act on that subject, as illustrations of the proposition with which I started; that in stressing the difference between state and Federal authority in these matters we are not facing the realities. If we are to deal with the realities we must use both state and Federal authority, and if we fail to use them co-operatively, as expediency may dictate, the realities will escape us.

Federal Versus State Jurisdiction Over Power Development and Its Supervision

By O. C. Merrill
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THE question of the development and distribution of electric power is fast becoming one of the most important of our domestic economic problems, second only to that of transportation. The lighting of our homes and streets, and the operation of our industries, our local transportation systems, and to a constantly increasing degree our main line railroads are dependent upon the production, transmission and distribution of electric energy. The volume of electric energy produced and used is increasing with extreme rapidity. A business which is so rapidly expanding creates a host of new questions respecting its management and regulation that demand consideration, if it is to develop with a due regard to the public interest.

Supervision or regulation of power development may be directed to one or both of two phases or stages of the problem: to the physical side, such as the plans of development and the construction and operation of the plant; or to the business side, such as the production, transmission, distribution and sale of the product, and to the financing of the undertaking. For the purposes of this discussion the exercise of governmental control over the physical elements will be called "supervision," and over the business elements, "regulation."

With respect to the physical side, the state and Federal governments have points of contact only where water-power development is involved; for the Federal Government assumes no supervision over any other type of development, and over water-power development only in those cases where lands or other property of the United States are to be used, or where the interests of interstate or foreign commerce or international relations are concerned. Such supervisory authority as the Federal Government has assumed in these circumstances is conferred upon and exercised by the Federal Power Commission under the provisions of the Federal water power act of 1920. Likewise, with respect to the business side, that is, to the regulation of accounting practices and of rates, services and securities, the Federal and state governments at present have contacts in those cases only where projects are built under license of the Federal Power Commission; for under no other circumstances has the Federal Government yet asserted jurisdiction.

Such possibilities of conflicting or overlapping jurisdiction as may exist at the present time between the state and Federal governments respecting either supervision or regulation of power development arise, therefore, wholly out of the administration of the Federal water power act. Under such circumstances it seems desirable to review certain of the provisions of that act and to discuss certain of the administrative policies of the Commission which relate to the subject before us.

Federal Supervisory Powers

The supervision, which the Federal Power Commission exercises, or may exercise, over water powers which it licenses, covers approval of the general scheme of development and of the plans of the physical structures, determination of the time within which the work shall be begun and completed, inspection of construction, requirement of maintenance of plant in full operating efficiency and of the establishment of reserves adequate to make all necessary repairs and renewals, and the adoption of regulations for protection of life, health and property.

While certain of the states such as New York, Wisconsin and West Virginia exercise supervision over all of the items above named, it appears that other states make little or no attempt to do so. In general, those states with administrative water codes governing the appropriation and use of the waters of their streams fix the time for beginning and completing construction as a condition of maintenance of right to the use of water. Some of these states require the approval by a state official of plans of dams in order to give public protection against unsafe structures. A considerable number of states through their boards of health prescribe regulations respecting sanitation in connection with the construction and operation of the power plants. The majority of states through public-utility regulatory statutes make requirements with respect to the establishment of depreciation reserves, but few, if any, appear to exercise jurisdiction over the employment of these reserves for purposes of renewals or replacement other than as the matter may affect findings in a rate-fixing proceeding.

Few of the states appear to have attempted to exercise such supervision over the general scheme of proposed water-power developments as to insure, as the Federal water power act attempts to do,

> that the project adopted . . . shall be such as . . . will be best adapted to a comprehensive scheme of improvement and utilization for the purposes of navigation, of water-power development, and of other beneficial public uses.

In the only instance where a conflict was imminent between the Commission and state authorities over this question, public hearings and the production of new evidence resulted eventually in an agreement being reached. Experience in the administration of the Federal water power act has shown the necessity of the exercise of this authority by some public agency if waste of our water-power resources is to be avoided.

The Federal Power Commission reviews all plans of structures with a view of determining whether they are reasonably well adapted to make effective use of the power available at the site to be developed. It has, in co-operation with state agencies, occasionally passed upon and required revision of plans of dams that appeared to have inadequate margins of safety. When navigation structures are involved, the act requires that the plans shall be subject to the approval of the Chief of Engineers and of the Secretary of War. All construction work in progress in navigable waters is subjected to inspection by the engineers of the War Department. Only rarely, in other cases, has the Commission found conditions such as to make it necessary to have continuous inspection of construction work and in these cases it has requested state agencies either to assume complete responsibility or to co-operate with the Commission.

AVOIDING DEADLOCK POSSIBILITIES

Since the supervisory authority possessed both by the states and by the Federal Government appears to have a sound legal basis, so that the assent or approval of each is required before a project can proceed, there is possibility of a deadlock between the two authorities. As partial avoidance of such a situation the Federal water power act requires an applicant for a license to present satisfactory evidence of compliance with "the requirements of the laws of the state or states within which the proposed project is to be located with respect to bed and banks and to the appropriation, diversion and use of water for power purposes and with respect to the right to engage in the business of developing, transmitting, and distributing power, and in any other business necessary to effect the purposes of a license under this act." This requirement of the act avoids approval by the Commission of a project which has not the approval of the state. It does not, however, obviate conflict of supervisory authority after the approval and issuance of permit or license. As a matter of practical administration, therefore, conflict can be avoided only by co-operation between the two agencies. Notwithstanding the rapid growth of the power industry and the increase in interstate transactions, the Federal Power Commission considers that power development is still primarily a matter of local or regional interest rather than national, and that, therefore, supervision should as far as practicable be exercised by the states, the Federal Government holding its powers in reserve to aid or supplement the states. This policy of co-operation between state and Federal agencies will, it is believed, make the most effective use of the authorities which both possess.

POWERS OF THE COMMISSION

With respect to regulation of rates, services and securities, or other matters affecting the business aspects of power development, the Federal Power Commission through jurisdiction conferred by the Federal water power act exercises such regulatory authority as the United States has yet asserted in the premises; but it exercises it only with respect to its own licensees, and then, in general, only in absence of authority in the states to exercise such regulation themselves.

The Commission is authorized to prescribe and has prescribed a system of accounting for its licensees. Where, however, there is a system of accounting prescribed by appropriate state authority the licensee is not required to maintain the Commission's system, but merely to submit under the classification of items of the Commission's system of accounts certain reports applicable only to project property. Since the United States has the option at the termination of any license to issue a new license to the original licensee, or to issue a license to a new applicant, or to take over the properties itself; and since if either of the last two options is exercised, the properties must be paid for on the basis of the net investment not to exceed fair value, the maintenance of a standard method of fixed capital recording and reporting is essential.

For similar reasons the approval of the Commission is required for the execution of contracts extending beyond the license period. State interests are recognized by requiring in addition the approval of the appropriate state agencies. The provisions of the law with respect to accounting, reporting, and long term contracts, are primarily for the purpose of protecting the potential interests of the United States in the properties under license. The policies pursued in their administration would appear to obviate any conflict of jurisdiction between the states and the Federal Government.

WHERE STATE JURISDICTION ENDS

In the majority of cases the transactions involved in the production and distribution of power fall wholly within state lines and are, therefore, within the jurisdiction of the state; but, if we may reason from analogous circumstances in cases of interstate delivery of gas as treated in recent Supreme Court decisions, state jurisdiction ceases when the electric energy passes across the state line and the transaction thereupon becomes "interstate commerce." In the Kansas Natural Gas cases [1] the Court said: "The commerce clause of the Constitution, of its own force, restrains the states from imposing direct burdens upon interstate commerce."

Interstate commerce in electric energy may occur under either one of two sets of circumstances. It may consist in the transmission and sale of energy produced in one state and transported and furnished directly to consumers in another state by the company so producing and transporting; or it may consist in the transmission and sale in wholesale quantities to a distributing company, the transporting company possessing no franchise rights for engaging in distribution itself.

It is under the first set of circumstances that the great majority of interstate energy transfers are taking place to-day. They are illustrated in the case of the *Pennsylvania Gas Company* v. *the Public Service Commission of New York*,[2] in which the Court said:

> The thing which the State Commission has undertaken to regulate is local in its nature. . . . This local service is not of that character which requires general and uniform regulation of rates by Congressional action. . . . It may be conceded that the local rates may affect the interstate business of the company. But this fact does not prevent the State from making local regulations of a reasonable character. . . . Until the subject matter is regulated by Congressional action, the exercise of authority conferred by the State upon the Public Service Commission is not violative of the commerce clause of the Federal Constitution.

The second set of circumstances—wholesale interstate transfers—were illustrated in the Kansas Natural Gas cases, and are the circumstances under which, in several cases, important interstate energy exchanges are taking place to-day and will take place to a constantly increasing degree in the future as the limits of our superpower systems are extended and their capacities increased. In the Kansas Gas cases the Supreme Court said:

> The business of supplying, on demand, local consumers is a local business, . . . whether the local distribution be made by the transporting company or by independent distribution companies. . . . But here the sale of gas is in wholesale quantities, not to consumers, but to distributing companies for resale. . . . The transportation, sale, and delivery constitute an unbroken chain, fundamentally interstate from beginning to end, and of such continuity as to amount to an established course of business. The paramount interest is not local but national, admitting of and requiring uniformity of regulation. Such uniformity, even though it be uniformity of governmental non-action, may be highly necessary to preserve equality of opportunity and treatment among the various communities and states concerned.

PROBLEM OF INTERSTATE TRANSMISSION

While no cases involving interstate transmission of electric energy have yet come before the Supreme Court, it is hardly likely that the Court would apply any other rule than it has applied in the cases of interstate transmission of gas. It would appear, therefore, that the Federal Government must assume jurisdiction over these wholesale interstate transfers if they are to be regulated at all. It has been suggested, however, that the court may not have exhausted the alternatives, that the states may accomplish indirectly what they have been forbidden to do directly, or that the exercise of Federal authority may be obviated through a transfer of such authority by congressional enactment to the states.

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[1] 265 U. S. 298; 40 Sup. Ct., 544.

[2] 252 U. S., 23; 40 Sup. Ct., 279.

Since regulation of delivery of energy to consumers by the distributing company under the ruling of the Pennsylvania-New York case may be retained under the authority of the state commissions, it has been suggested that in cases of wholesale purchase where the Commission has no jurisdiction over the wholesaling company, it may ignore the purchase price and fix rates to consumers on what it thinks the price ought to be rather than on what it is. Apart from the fact that the question of whether the distributing company shall or shall not purchase at the price offered is an exercise of a managerial function which the courts are loath to permit the Commissions to exercise on behalf of the utilities, such an act would not be regulation of the character we are justified in expecting to-day. Such a decision by a state commission would not follow upon an orderly summons of the parties and presentation of evidence, for one of the parties would not be within its jurisdiction. In absence of the voluntary acquiescence of the parties a decision of this character could be made effective only through confiscation of the property of the distributing company or through exclusion from the state of the energy previously imported.

It has also been proposed that such a situation could be handled by the states through the medium of interstate compacts which, if approved by Congress, would have the effect of transferring the Federal jurisdiction to the states themselves. If there were only occasional cases of such interstate transfers, or if no transfer affected more than two states, this method might be possible. But the number of cases is constantly increasing, and eventually the transfers will affect groups of states. How readily we may expect any such group to agree upon a common course of action may be judged by the difficulties encountered in the attempt to negotiate the Colorado River Compact where seven states are involved, and the Delaware River Compact where only three are involved. States are naturally jealous of their rights. Being sovereigns they may act only by unanimous consent. If we can imagine a situation in which, for example, the eleven northeastern states comprising the so-called "Super-power Zone" could continue to settle the problems of interstate energy transfers satisfactorily and expeditiously by unanimous consent under the terms of a compact; we would, in effect, have merely created another Federal Government to serve in the place of the one we now have.

The only authority to regulate rates, services and securities of corporations engaged in interstate commerce in electric energy which Congress has yet conferred is that given under the Federal water power act to the Federal Power Commission, and this extends only to authority over the licensees of the Commission, and over them only to the extent that the state agencies have not the authority to act or cannot agree. The Act also gives the Commission, under similar limitations, authority over intrastate operations of its licensees. Since practically all the states have authority to regulate rates and services and the majority of them to regulate securities, the Commission's intrastate jurisdiction, should it elect to exercise it, would be confined to approval of security issues. It has not acted in any intrastate case, and in only one interstate case, that of the Conowingo project on the Susquehanna River, where the Commission took jurisdiction over the security issues and the interstate contracts because the project was located in two states, and involved wholesale interstate power transmission.

The cases of interstate energy transfers to which the Federal water power act apply, are but a very small part of the cases which exist. These transfers are, however, becoming increasingly more numerous and more important. They will require regulation if the industry is not to get out of hand. The authority to regulate lies in the Federal Government; but to attempt its complete exercise in hundreds of isolated cases scattered all over the United States, through the agency of a commission located in Washington, would involve complications, large expense, and long delays. On the other hand, to confer complete authority on the states would be likely to result in interstate conflicts, or deadlocks. It would appear that the greater part of the disadvantages of complete state or of complete Federal action could be avoided by a combination of the two, by conferring on the states original jurisdiction through joint action of their regulating bodies, and upon the Federal Government appellate jurisdiction. The state bodies, more familiar with local conditions than any Federal body would be likely to be, could hold hearings, take testimony, assemble evidence, and determine the issues. If the states agree and the utility company accepts their findings, such findings should be considered conclusive. If there is not agreement, or if the utility is unwilling to abide by the findings, then and only then would it be necessary to take the case to a Federal agency. Such agency should have appellate jurisdiction only and should render its decisions from the record presented without authority to admit new evidence. A procedure of this character would leave the final authority over interstate commerce in power where it properly belongs in the hands of the Federal Government, would give the states opportunity to settle their own differences, and would avoid the necessity of overloading Federal agencies with details, or with matters that the states had better decide for themselves.

With the powers which the states already possess under the ruling of the Pennsylvania-New York case, and with original jurisdiction conferred upon them by act of Congress in cases of wholesale interstate energy transmission, a situation would be established whereby, without doing violence to our system of government, it should be possible to cover the field effectively and without essential duplication, permitting no twilight zone of uncontrolled operations, but leaving the original responsibility in matters of regulation where it appropriately belongs—in the hands of the several state commissions.

More Government in Business — Does Wall Street Need It, or Main Street Want It?

By Gilbert H. Montague

Of the New York Bar

THE law, as it now stands, makes a sharp distinction between the power that the Federal Government may exert over corporations that have been proved to violate the law, and other corporations which, so far as any proofs or any charges show, have violated no law whatever. The courts have, to the broadest extent, upheld the power of the Federal Government to require the fullest kind of information and the completest disclosure from corporations after they have been proved to have violated the law, or in the course of proceedings against such corporations for violations of law.

How Far Should Government Go?

We are now discussing, however, corporations against which no such charges have been made—corporations that comprise over ninety-nine per cent of American business—and the question we are to consider is the question that Professor Ripley has raised:[1] To what extent, in respect of corporations against which no charges whatever are made, shall the Federal Government exercise detailed control by prescribing what shall be their forms of financial statement?

Professor Ripley's concept of a stockholder, in any of the large corporations listed on the stock exchange, is that such stockholder is an actual or potential voter at stockholder's meetings. Influenced by that concept, Professor Ripley a year ago called attention to what he regarded as dangerous tendencies, under the liberal corporation laws of most of our states, in respect of various kinds of limitations on the voting power of stockholders.

With all respect to the Professor, I think that his concept of the stockholder is very remote from the realities as they exist in any of the large corporations listed on the stock exchange. Very few stockholders, in any of the great corporations of the present day, actually or potentially ever conceive of themselves as voters. You and I are investors. We buy stocks for investment. When we disapprove of the management, we sell the stock. When we have confidence in the management we retain the stock. It is in that act of either selling our stock or continuing to hold our stock, and not at any meeting of stockholders, that we register whatever vote we have.

Because the stockholder is essentially and primarily an investor, the stockholder is of course entitled to the fullest obtainable information about his investment. On this I profoundly agree with Professor Ripley. But the information that will give to the stockholder-investor the information that he needs and is entitled to have does not necessarily have to be conveyed in any stereotype form of corporate report, financial statement, income account, or record of operations.

Anyone familiar with corporations knows that it is just as proper for a corporation consistently to write down its plant, patents and good-will below their probable value, as it is for the corporation to attempt every year some form of appraisal by which the corporation may try to place an estimate on the value of those assets. Anyone who has ever tried to estimate the value of such assets knows that no two men can ever agree as to what their value really is at any particular time, and that their value today may be a very different thing from what their value may be six months from now.

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[1] See article by Professor Ripley, "Stop, Look and Listen," in the *Atlantic Monthly*, Sept., 1926.

To attempt in any serious way any periodical appraisal of such asset values for any of the large industrials of the country would be foolish, wholly misleading, and wasted effort, so far as information to the stockholder is concerned.

The stockholder as an investor is entitled to information regarding his investment, but, as clearly appears from this illustration, that information can just as truly be given to the stockholder by forms of financial statement which, over a period of years, will show whether the corporation is writing down or writing up the value of those assets—in the case of patents and goodwill, whether the corporation conservatively gives no value at all to those items—and which will thus indicate to the stockholder what course the corporation is following in respect to those assets, so that if he wishes he may make his own estimate, which probably will be better for his purpose than having it made by anyone else.

Professor Ripley's assumption, therefore, that the only proper way of giving this information is for the corporation to fill out some stereotyped form of financial statement absolutely misses the realities of the situation.

Starting with the initial fallacy that the information to which the stockholder is entitled can be given in only one way, that is by a stereotype form of financial statement, income account and record of operations, Professor Ripley moves to the next step in his fallacy, which is that since this is not now being done, there should be set up somewhere in the Federal Government some machinery by which corporations should be compelled to do it.

Because some corporations do not give to the public all the details regarding their financial condition that he thinks they should give, Professor Ripley proposes that all corporations engaged in any form of interstate commerce—which means substantially all the corporations of the country, regardless of size and regardless of how their securities are owned—shall annually, or as much oftener as the Federal Trade Commission may prescribe, fill out such forms of financial statement, income accounts and reports of operation, in such detail, and in such manner, as the Federal Trade Commission shall prescribe.

IS INTRUSION WARRANTED?

Is there, at the present time, anything confronting the investors of this country that calls for any such enormous intrusion of government into business, or for the setting up of any such governmental machinery as would be necessary in order to pass upon the details of all corporate accounts of practically all the corporations of this country?

Once more I return to Professor Ripley's article: does "Wall Street"—in which he misleadingly epitomises all corporations—need any such extraordinary intrusion of government in business, or does "Main Street"—by which Professor Ripley means you and me and all the rest of us—really want it?

Several corporations named by Professor Ripley have since proved that if he had more carefully studied their financial statements he would have found there the details which he claimed were being concealed. Several others could show that if he had ever examined Moody's or Poor's or other standard books of reference, he would have found there the information which he claimed was being withheld. Still others could establish that whenever requested by any responsible stockholder they have always been ready and willing to give additional information on any specific point, and to explain the reason for the form of their published financial statements.

The suggestion, running through Professor Ripley's article, that there is any degree of unresponsiveness on the part of the directors and officers of our great corporations to requests for information coming to them from their stockholders, is absolutely contrary to ordinary experience. No man who has had any experience whatever with the great big corporations of the country can fairly say that there is any indisposition on the part of the officers and directors of the corporations of the country, taking them by and large, to respond to requests for information which may come to them from stockholders.

The degree to which, during the past few years, officers and directors of corporations have become more and more responsive to that kind of request for information is so conspicuous that it is noteworthy, in Professor Ripley's article in which the contrary is suggested, that the Professor has had to go back prior to 1901, twenty-five years ago, to find his best illustrations of any contrary examples.

On the face of it, to use the nomenclature of "Wall Street" and "Main Street" which Professor Ripley has popularized, "Wall Street" plainly does not need, so far as financial statements are concerned, any degree of coercion from the Federal Trade Commission. That leaves this question: Why, in a situation which, if not entirely cured, is already so nearly cured, and can so easily be completely remedied by a plain appeal to educated public opinion and to the sense of fairness of the business community, does Professor Ripley turn his back on these perfectly obvious modes of accomplishing whatever reform is needed, and assume that "Main Street" prefers to accomplish results by means of government paternalism and Federal bureaucracy?

Is there, on the part of "Main Street," any such desire to put the government into business? Professor Ripley assumes that there is, and that the government already has that power. In fact the sensation of his article is his triumphant announcement of his discovery that at the present time there is in the Federal Trade Commission full power to do this, and his comments on the extent to which the Trade Commission has been neglectful of its duty.

Professor Ripley says:

> The Federal Trade Commission Law of 1914 contains in Section 6 a positive delegation of authority to this body which is entirely adequate to the performance of the service so greatly needed at the present time. The Federal Trade Commission, had it chosen to exercise these powers, might since 1914 have gathered and compiled information—to paraphrase the statute—concerning the organization, business and management of any large corporation engaged in commerce, except banks and common carriers.

These statements Professor Ripley makes in his article entitled "Stop, Look, Listen," but if he had ever acted upon his own advice he must certainly have discovered that each of them is absolutely contradicted by the facts. No such powers are, or ever have been, possessed by the Federal Trade Commission.

FEDERAL COURT OPINIONS

Decisions to this effect have been rendered by Federal courts throughout the United States in September, 1919, April, 1920, March, 1922, October, 1922, November, 1922, January, 1923, and September, 1926, and by the Supreme Court of the United States in March, 1924 and March, 1925.

This unbroken line of decisions, each of which was by the unanimous opinion of every judge in each of these courts, has never been challenged by a single decision to the contrary. Heedless of these facts, Professor Ripley chides the Federal Trade Commission for "the neglect of this section of the existing law," which he says is because "the commissioners have been legalistically rather than economically minded," and "since the war, with its concomitant over-development of Federal power, a natural reaction against so-called paternalism supervened."

Each of these reasons, before Professor Ripley ever advanced them, had been officially refuted by judges whose responsiveness to economic thought, whose sympathy with reform, and whose reputation for liberalism, both before and since their appointment to the Supreme Court of the United States, have always been beyond dispute.

"The mere facts of carrying on a commerce not confined within state lines, and of being organized as a corporation, do not make men's affairs public, as those of a railroad now may be," said Mr. Justice Holmes in March, 1924, in an opinion in which every justice in the Supreme Court of the United States concurred.

"Any one who respects the spirit as well as the letter of the Fourth Amendment," continued Mr. Justice Holmes, speaking for the unanimous Supreme Court, "would be loath to believe that Congress intended to authorize one of its subordinate agencies to sweep all our traditions into the fire. . . . We do not discuss the question whether it could do so if it tried, as nothing short of the most explicit language would induce us to attribute to Congress that intent. The interruption of business, the possible revelation of trade secrets and the expense that compliance with the Commission's wholesale demand would cause are the least considerations. . . . We cannot attribute to Congress an intent to defy the Fourth Amendment or even to come so near to doing so as to raise a serious question of constitutional law."

At least two of the judges of the Supreme Court who joined in this decision are economists who, though we seldom think of them as such, are the equals, if not the superiors, of any economists connected with any of our colleges and universities.

PROTECTING FUNDAMENTAL RIGHTS

At this point, it may be expected that somebody will say, "Well, after all, even if Professor Ripley is completely wrong as to the remedy, we must at least give him credit for good intentions, and for calling attention to something that needed to be reformed."

Whether there is anything in the situation that really needs to be reformed is a question to which I have already referred, but even if there is, I inquire whether, as a matter of intellectual integrity, it isn't time to cease this particular form of apology.

If a physician happens to prescribe arsenic, when he ought to have prescribed quinine, it isn't any apology for him to say that at least he knew the patient had a fever.

If an engineer builds a bridge at a place where no foundations are possible, it is no excuse for him to say that at least he favored better transportation.

Economics is indeed a backward science if the same rudimentary standards of sound knowledge, as well as good intentions, which for generations we have expected from physicians and from engineers, cannot be expected of economists.

The principles that underlie these court decisions to which I have referred are principles that go down to the very foundations of the Republic. Behind these principles, which have been unanimously endorsed by every judge in every court wherever the question has arisen, rests the undoubted concurrence of an overwhelming majority of Americans in every walk of life. If these principles had not been established, one hundred and thirty-seven years ago in the Constitution, they would immediately have to be planted there today, in order to save the states from being swallowed up in an unmanageable, overgrown Federal Government, and to save our fundamental rights to life, liberty and the pursuit of happiness from being obliterated under a sprawling congeries of Federal bureaus.

I don't intend here to urge these principles merely because they are old. I am not invoking the authority of antiquity. I state simply that if, at the present time, these principles had not been applied by these outstanding, forward-looking economists of the Supreme Court, so tremendous is the volume of business that would be brought under Federal control, in the most stereotyped and detailed fashion, that the degree of centralization which would result would break down our form of Federal Government. Taking it simply as a question of administration, it would be impossible in practice to set up any machinery that would work. That is why we are confronted with the question which is the title of my article: "More Business in Government; Does Wall Street Need It, Or Does Main Street Want It?"

TRUSTING PUBLIC OPINION

My sober conviction is that when the people of this country, represented under the collective title of "Main Street," realize exactly what has already been accomplished, simply by an appeal to public opinion and to the sense of fairness of the officers and directors of the great corporations of this country, and how very slight is the need for further reform, and when they realize that in respect of any corporation which is being charged with violation of law, or which has been convicted of violation of law, there is almost no limit to the degree of control which the Federal Government may now exercise over that corporation, they will conclude that, as regards corporations touching every branch of American life, against which no charge of violation of law has ever been made, they can safely assume, for the time being at least, that it is not necessary to set up in Washington any bureau to prescribe the details of every financial statement that those corporations shall put out, and they will conclude, for a while longer at least, to rely upon educated public opinion and the sense of fairness of the business community.

Federal Regulation of Corporations Under the Commerce Clause

By Abram F. Myers

Federal Trade Commissioner

THE constitutional grant of power to Congress was to regulate commerce among the several states, not corporations engaged in such commerce. Corporations are the creatures of the states and the instruments through which commerce, both within and among the states, is transacted. Under the constitutional plan the necessary regulation of the internal affairs of a corporation belongs primarily to the state of its incorporation. The business of a corporation, to the extent that it involves the buying or selling of goods in one state for delivery into another, constitutes interstate commerce. Where interstate commerce begins, and where it leaves off, has been defined with some precision, and its regulation is exclusively the function of the Federal Government. This distinction between the power to regulate a corporation, and the power to regulate its interstate business, is elementary and important; but it is not as rigid in its application as in its definition. Otherwise Federal control of corporations would be legally impossible and there would be no need for this symposium, unless it looked to the further amendment of the Constitution.

Before the adoption of the Constitution there were only twenty-one business corporations within the United States; and of these only two were trading companies and one a manufacturing company. Commerce among the states was a vision, not an actuality. To-day corporations predominate in influence, if not in numbers, in all gainful pursuits save merchandising and personal service. Of the estimated national income of seventy billions in 1923, perhaps thirty-three billions, or say between forty and fifty per cent, was acquired by or through corporations. Practically all of those corporations were engaged in interstate commerce in the sense that they either bought or sold goods in states other than those in which they were located; at least two-thirds were engaged in interstate selling. The amount of their interstate operations may be estimated at around twenty-one billions.

Problem of State-Federal Jurisdiction

Commercial corporations—the kind with which we are now concerned—are created for a single purpose; that is, the transaction of business. Business is the very life of such a corporation; without business, it dies. The connection between a corporation and its business being so vital, it follows that the one may not be regulated wholly without regard to the other. Regulation of interstate commerce, that is the business of a corporation, necessarily implies some measure of control over corporations engaged in such commerce. Obviously there can be no adequate regulation of interstate commerce that does not extend in some degree to the instruments of such commerce. In the case of the railroads, whose business is not only largely interstate but affects directly and materially the interstate business of others, the need for unified national control has been recognized and put in force. So far as the railroads are concerned, Federal control of corporations is an accomplished fact.

Every regulation of interstate commerce by the Federal Government involves the occupation of a jurisdiction, or the exercise of a function, formerly belonging to or exercised by the states. The courts, therefore, have been extremely cautious about laying down general principles dealing with the powers of Congress under the commerce clause. Since the adoption of the Constitution great progress has been made in the direction of a unified national control of the nation's business. This advance, however, has been neither steady nor unopposed. It has been accelerated or retarded, depending upon the existing state of public opinion. The boundary line between the jurisdictional spheres of the state and Federal governments is elastic, not rigid; ragged, not straight. The courts, while deciding cases on the law and evidence, have not been unmindful of the state of public opinion in difficult cases.

Much as we would like to regard the law as an exact science, we can only speculate as to how far the courts will indulge Congress in efforts to control industrial corporations by sporadic acts not imposed as conditions to the right to engage in interstate commerce. The power to control corporations through publicity—a method recommended by the Industrial Commission and attempted to be carried out through the Bureau of Corporations and the Federal Trade Commission—still remains in doubt. The Supreme Court, after three years of deliberation, finds itself unable to decide whether the Federal Trade Commission has the power to compel the furnishing of reports concerning costs and profits. Recent decisions relating to the Commission hold that, before its inquisitorial powers may be exerted, there must be a finding, or at least a specific charge, of a violation of some Federal law on the part of the corporations to be investigated. These decisions reject the view that the preventive or prophylactic effects of publicity may serve as a justification for the exercise of inquisitorial powers. There is a growing tendency on the part of the courts to brand all investigations as fishing expeditions unless it appears that the fish are already caught.

This, however, is but a natural manifestation of the policy of our law, derived from the common law, and has for its purpose the protection of the individual against unnecessary governmental molestation. The theory is that governmental interference in business comes as a penalty for an infraction of the law. It is punitive, not preventive; it has to do with locking the stable after the larceny is committed. While the courts strain over the power to obtain information from industrial corporations (except under procedures established for the protection of persons accused of crime), they do not hesitate to exert the most drastic measures of control over such corporations once they have been adjudged guilty of some purely statutory offense. According to the prevailing view the government may not intrude upon the privacy of a corporation to ascertain whether it is obeying the law or whether additional laws are necessary for the protection of the public. But as soon as a violation of the law is established, the corporation becomes subject to the full power of the nation and the privileges and immunities conferred by the state avail it nothing. Thus corporations adjudged in violation of the Sherman Antitrust Law may suffer their charters to be rendered useless and even canceled; their mortgages to be rewritten; and their properties to be divided and sold. These are measures of direct control equal to any which may be exerted by the state under whose laws the company was incorporated.

The time is approaching when the country will be confronted with Federal control of corporations as an inescapable issue. The statutes now on the books, for the most part, have to do with the regulation of the business of corporations, rather than with the control of the corporations themselves. Such statutes were more nearly adequate to the protection of the public in the days when the ownership of corporations was confined to a few powerful families or groups, than they are to-day. The great corporations to-day are with few exceptions owned by thousands of stockholders, big and little; and their securities are held in every state. The protection of the competitor of a corporation and the consumer of its products is still a matter of grave concern; the protection of the investor is becoming quite as important. Diffusion in the ownership of corporate securities, more than any other recent development, makes Federal control an issue—perhaps a necessity.

Public opinion will not much longer tolerate a condition under which a few states vie with one another in creating corporations with unlimited capital and powers, without requirement that they engage in business in the states of their incorporation, and without provisions looking to the disclosure of their operations or accounts, to transact business and market their securities in other states. An effort has been made to justify these loose incorporation laws on the ground that they encourage the development of industry within the states; but the effort fails in view of the omission of any provision that the corporations shall conduct their operations in whole or in part within the states of their incorporation. The inference is irresistible that the incorporation of companies is solicited by these states because of the license fees and other revenue derived from the business. The creation of corporations has lost its dignity as an exercise of the sovereign prerogative for the furtherance of commerce and in the interest of the people of the state. What was once regarded as the conferring of a great privilege, to be limited and circumscribed by all necessary provisions for the protection of the public, has become a bargain sale, and states are advertising and competing for the business.

But even though, as is widely believed, there is an urgent need for Federal control of corporations, extension of the powers of the Federal Government to that subject will meet with stubborn opposition. The consistent opponents of centralized government will repeat their time-honored, but generally disregarded, argument that the further extension of Federal power will impair, possibly destroy, our dual form of government. States' rights, by no means a forgotten slogan, will be revived. It will be contended that the proposal will further centralize power in administrative bodies remote from popular control. Finally, the still more appealing objection will be raised that the proposal necessarily involves an increase in the existing over-supply of bureaus and bureaucrats—a disadvantage thought to outweigh all possible benefits.

FEDERAL INCORPORATION

The proponents of Federal control, on the other hand, are fortified with arguments that have carried them to victory in many bitter contests. Does not the Constitution contemplate that the powers of the Federal Government shall extend to every matter that concerns the whole people, and in which the states are incompetent or unwilling to act? Can it be that between the powers of the state and Federal governments there exists an air pocket which leaves the citizens of a majority of the states without proper protection from the action or inaction of a few states? And is not Federal control made necessary by the practice of a small number of states in spawning corporations with unlimited powers to transact business and market their highly speculative securities in all of the states?

If reform could be had without the further extension of Federal power, all would rejoice. The adoption by the states of a uniform and enlightened policy in chartering and dealing with corporations would afford a remedy more in keeping with our dual system of government. Self-correction on the part of the corporations also could constitute, if not a complete solution, at least a great step forward. But one must indeed be an optimist to expect action from those quarters. The self-interest that leads to the adoption of the methods complained of, would preclude their voluntary relinquishment. Possibly national prohibition could have been avoided by the observance of a certain degree of self-restraint by those engaged in the liquor traffic. But self-interest is a barrier to self-reformation, and we may not hope for any useful results from state legislation or voluntary corporate action.

Coming to a consideration of the courses open to the Federal Government, the first choice is between the exertion of a direct and immediate control over the corporation itself, and the exertion of an indirect control by means of publicity. In the present state of the decisions, we can hardly expect that measures of the first class will be sustained unless Congress boldly announces that it intends to occupy the entire field of regulation so far as it relates to interstate commerce, with all its incidents. Nothing short of a Federal incorporation law for all concerns engaged in interstate commerce could achieve that result. If the exertion of such measure of control is the aim of the present agitation for Federal control of corporations, then let us hope for a revival of the discussions of the last quarter of a century concerning Federal incorporation.

While Federal incorporation would vest in the national government full and direct control over corporations engaged in interstate commerce, it would have the added virtue of protecting the corporations against restrictive and discriminatory legislation by the states. The most impressive arguments that have been made in favor of a Federal incorporation law, have been urged from the standpoint of the corporations. Theoretically a corporation chartered in one state is a foreigner in the forty-seven other states, and enters those states, and remains in them for the transaction of business wholly by sufferance, and (within limits) subject to the conditions and limitations that those states, acting individually and from the standpoint of their selfish interests, see fit to impose. While in practice the attitude of the states towards the corporations of other states has been modified by considerations of comity and tolerance, it is nevertheless true that insofar as interstate commerce is concerned, one state authorizes business concerns which every other state has the right to restrict or even to destroy.

As already pointed out, the Federal Government may utterly dismember a corporation that has been adjudged in violation of the Sherman Antitrust Law. But why should the Federal Government withhold its hand until a combination has been formed under state law? Would it not be better for the Federal Government to say in the beginning what shall be the nature of the organization that may be permitted to engage in interstate commerce? Federal incorporation would vest in the government a degree of control over corporations that would amply protect the public interest, without the necessity for long and expensive litigation; and would enable the business of the nation to be conducted with a degree of certainty and stability that would more than compensate for the disadvantages inherent in the extension of Federal authority.

GRANTING OF FEDERAL LICENSES

Indirect control of corporations, by publicity of their accounts and affairs, as well as many of the objects that could be attained by Federal incorporation, may be accomplished by a system of Federal licenses. Measures for Federal license, and for Federal incorporation, have gone hand in hand into and sometimes through the committees of Congress; and their respective merits and demerits have been many times discussed. Federal licenses for corporations engaged in interstate commerce have been favored by many on the ground that the enactment of such a measure would avoid many of the serious questions relating to state taxation and state police power that would be inherent in any provision for Federal incorporation. As a means of insuring publicity of corporate affairs, a Federal license law would be entirely effective.

Such a law would provide that no corporation should engage in interstate commerce without first obtaining a license from the Federal Government. Such licenses would be issued by an appropriate government agency, preferably the Federal Trade Commission, and would be conditioned upon compliance by the corporation with the conditions enumerated therein. A condition of the license would be that the corporations should file with the issuing body annual reports of their operations, including balance sheets and income statements. The corporations would be classified; and for those corporations in which the public interest required it, particularly for the benefit of investors, the reports, or appropriate parts thereof, would be made a public record and also currently published. For the more important corporations, including representative concerns in the chief branches of industry, quarterly income statements would also be required sufficient to show the volume of business and net operating income, for the purpose of disclosing the trend of business during the year. For all corporations reporting, the information would be compiled and published promptly in unidentified form for the purpose of guiding business development and promoting business stability.

The need of comprehensive statistical information, for the intelligent conduct of business, is recognized by all who are conversant with the subject, and it is the professed purpose of the current organizations of all branches of business into trade associations. The end to be served by having such information, namely, the more intelligent direction of business operations based on better knowledge of supply and demand conditions and on the profitableness of business in different branches as indicative of overdevelopment, or the contrary, is obviously of such great public concern that the government should itself collect, compile and promptly publish, as a general clearing house, the fundamental and essential facts.

UP TO CONGRESS

The problem is primarily for Congress, and must be faced squarely, if at all. The fundamental question is:

Will the public interest be better served by the preservation of the historic division of powers between the state and Federal governments, or by a unified national control of business? The proposal to extend the power of the Federal Government to corporations chartered by the states should not be undertaken without full appreciation that it involves a departure from long cherished constitutional concepts. The measures to be adopted must be plain and should clearly express their true scope and meaning. Decisions adverse to governmental authority have sometimes resulted from the fact that it was being attempted to give an effect to statutes not in the contemplation of Congress at the time of their enactment. Legislatures are too fond of enacting ill-drawn statutes and holding administrative officers and the courts to strict accountability for their enforcement. The exertion of Federal power over state corporations is too important an issue to be submitted to judicial determination upon a forced construction, or even a literal application of a statute not specially designed to that end. Not only should the measures express their true scope and meaning, but they should be based on congressional findings of specific evils to be remedied.

Once the problem has been fairly met, and clear measures based on adequate findings have been adopted, I believe that the power of Congress to enact such measures will be upheld by the courts. Courts in giving effect to an act of Congress are fortified by a realization, derived from the proceedings attending its passage, that they are executing the will of the people. In the decision sustaining the Grain Futures Act[1] we have an example of the importance that the Supreme Court attaches to congressional findings as to the need for particular legislation in upholding the power of Congress to enact it. Administrative officers, seeking to act under statutes of doubtful application are often turned back, not because the courts believe the Federal Government impotent to empower the officers to perform such acts, but because the officers do not exhibit clear credentials from the legislative branch, the source of their authority.

And so I repeat, once Congress has decided to exert its full powers in this direction, the Constitution will be found to be a facility, not an obstacle, in the harmonious adjustment of the powers of the state and Federal governments to the end that proper and necessary regulations may be provided for the protection, the prosperity and the convenience of the whole people.

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[1] *Board of Trade* v. *Olsen*, 262 U. S. 1.

State Regulation of Corporations by Policing Sales of Securities

By Hon. Keyes Winter

Deputy Attorney-General of the State of New York

THE subject under discussion, "Federal Control of Corporations," is as broad as the multifarious activities of the people of this widely diversified country of ours. I propose to limit myself to the subject of the regulation of corporations by policing the sales of their securities.

On general principles, I am opposed to the wholesale surrender by the citizens of the several states of their control over their business, and I am opposed to the alarming tendency fast becoming prevalent of assigning their minute and intimate affairs to the Federal Government at Washington for regulation.

Our dual form of government was established on the wise theory that the citizens of the several states retained the full and complete government over their own affairs. In forming a Federal Government they delegated to it only certain limited powers relating chiefly to transactions with foreign nationals, transactions in commerce between the states, the postal service and other interstate matters, all of which is defined in the Constitution of the United States.

It was the spirit of our government then, and the spirit of our government now, an inheritance from our Anglo-Saxon origin, that the individual citizen shall regulate his own affairs with the least government possible; and that such governmental control as is found necessary shall be primarily local and extend from the locality to the state only where the common interest requires the application of broader rules.

The problem that, confronts us here is not so much the expediency of Federal regulation of your or my business, but it is essentially the power and the ability of your state to properly regulate that business. The question is, has the authority of the several states collapsed over the corporate Frankensteins that they have created? This question I propose to answer in my remarks that follow.

A corporation is merely a form under which natural or individual persons transact their affairs. Like "Christmas spirit," it has no physical existence. It is what the philosophers call an idea. To us lawyers it is a contract between the state and a group of individuals with certain reservations, whereby these individuals and their successors may transact their joint affairs with certain privileges and liabilities that as individuals they do not have. Beyond a charter filed in a public office, nothing material is created, but the group thereupon take on certain relations among themselves and toward the public. This conception of a relationship is a corporation.

Creatures of the several states, these privileges and relations may be modified or regulated by their creators. Thus the right to succession, or the right to transfer the shares of corporations, may be regulated or even forbidden by the states.

The members of these groups are "stockholders." While in most instances these groups are composed of citizens of different states, yet their corporate privileges are valid only by virtue of the laws of the state of their incorporation.

Originally corporations were composed for the most part of small groups of business friends, associated in a common enterprise, each with a substantial interest. There are now, of course, many such. But in modern times stockholders constitute relatively enormous groups of the citizens of this country. The stockholders of some of our large corporations number many thousands, most of them owning but few shares. The United States Steel Corporation is a group of over 160,000 stockholders; the Pennsylvania Railroad, of over 140,000; the American Telephone and Telegraph Company, of over 366,000. Their personnel is constantly shifting, as these stockholders buy and sell out of the corporation. Hundreds of thousands of shares of United States Steel are bought and sold daily on the New York Stock Exchange. The transactions in shares of other corporations are almost equally as large. Hundreds of thousands of shares are bought on margin and the owner's name seldom appears on the books of the corporation. A large portion of these stockholders are women and people of small means with no business experience. More and more of the employes of corporations are becoming shareholders of their employers on partial payment plans, and some of these plans require the return of the stock when the employment ceases. The purpose of the scheme is to tie the employe to the business.

SEEKING A CURE

It is probably agreed on all sides that they need protection and need it badly, not only from the schemes and manipulations of wicked promoters, but also from their own cupidity. But where we doctors disagree is about the method of protection and the degree.

To approach the problem on the mob rule theory that this uninformed and undiscriminating mass of speculators can be equipped by publicity to regulate for themselves the intricate details of corporate business will certainly get us nowhere.

Recently a distinguished economist in the September issue of the *Atlantic Monthly* has most persuasively voiced a call for publicity of corporate transactions. He criticizes the meagerness of the usual annual report and then suggests as a remedy that the Federal Trade Commission be goaded into a general excursion into the books of all the corporations of this United States and divulge the results to the public.

This cry for publicity was made in the interest of present and of prospective stockholders. Now, let us inquire how such proposed publicity may benefit the stockholders, either actual or prospective. Does it secure a more economical management of the affairs of the corporation, or does it primarily enable investors to select, buy and sell shares in corporations to their advantage?

It is estimated that about 20,000,000 investors live in the United States. The vast proportion of this 20,000,000 are minority stockholders scattered from Maine to California. The individual voice of the greater portion of them appears so feeble and their inability to grasp the intricate and technical details of their business is so manifest that they wisely prefer to leave the helm in the hands of others, contenting themselves with the quotations of their stock on the public markets. Few of them attend corporate meetings. Hence, the actual management of their corporations is actually in the hands of one or two individuals who can and do perpetuate their own control, their own employes and their own policies by assembling proxies of fifty-one per cent of the stock in advance of meetings. So we find, particularly in our large corporations, that the responsible heads are placed there and are dominated by a few owners of the larger blocks of the stock, but nevertheless minority blocks. Although theoretically the vote of this enormous mass of stockholders may control bad management, practically a disgruntled minority stockholder's sole remedy against bad management is to sell his stock, take his loss, and reinvest the proceeds in other stock which he believes may be more fortunate.

It seems fairly obvious that the outcry for publicity has no direct relation to any cure for mismanagement of corporate affairs.

On the other hand, the public ventilation and exposure of the affairs of corporations tends to restrict fraudulent, unjust and unfair practices in the issue and marketing of their securities and enables investors to select, buy and sell with full knowledge of the facts.

In the last analysis, fraud is effected either by positive mis-statements or by concealments of facts. In the issue and sales of securities most frauds are accomplished by cunning innuendo and by concealments of fact. Investors buy and sell securities on cleverly circulated rumors, tips and hunches, and usually in complete ignorance of what they are buying and selling. Thus, the whole subject of disclosures by corporations of their affairs is closely related to the prevention of frauds upon stockholders, and inasmuch as the interest of the average stockholder is identified with the market for his stock, it follows that the state, by policing sales of stocks and by the enactment of laws for that purpose, may provide a full measure of protection to stockholders where it is vital. And this I hold is a proper function of government.

Again, I believe, and I assert it without fear of contradiction here, that government interference with the management of private business is not a cure. I am aware of the fact that the socialist thinks otherwise. My own experience in government operation has been disastrous. Frequent complaints are made to us against corporations whose business is conducted unwisely, where no dividends are being earned and particularly where the market price of the stock has collapsed. In one corporation we found that the moving spirit was a visionary inventor who was conducting the corporate affairs more to the end of developing a toy than to the production of dividends. In that case we interfered and compelled the inventor, a man with an international reputation, to eliminate himself from the management and install a voting trust controlled by the minority stock of the corporation. The stockholders responded by saddling the entire business on our office.

PASSAGE OF BLUE SKY LAWS

Forty-five states of the Union have passed blue sky laws regulating the sales of shares of corporations to the public. The dominant feature of all these laws is the grant of full powers to the several Security Commissioners to discover the condition of corporations selling stock or whose stock has been sold in these states.

With the exception of Delaware and Nevada every state in the Union has thus installed machinery to expose fraudulent, inequitable, unjust and unfair practices, not only in the sales of corporate shares in such states, but also from them.

Now, let us see whether these statutes are designed to protect stockholders and if they are administered with that effect.

The state blue sky laws do not

primarily regulate the management of corporate business, but they are designed to prevent the sale of corporate securities whenever fraudulent, unfair and unjust practices are discovered. They are all substantially uniform in that they all require corporations and individuals to give full information of their affairs to the state for that purpose.

Forty-three of these states prohibit any sales of securities in their states, and thereby exclude their citizens from owning shares in corporations unless these corporations are previously licensed. The burden is placed on the corporations to show a clean bill of health. New York, Maryland and New Jersey, on the other hand, differ from the other forty-three states in that respect. New York, Maryland and New Jersey freely permit unrestricted sales of shares of corporations until fraud or unfair and unjust practices are discovered, in which event the investment may be prohibited. The burden of proof is here placed on the state of discovering unhealthy conditions. Forty-three states have licensing laws. Those of New York, New Jersey and Maryland are known as investigation and injunction laws.

The effectiveness of blue sky laws depends absolutely on the vigilance, energy and intelligence of their administrators. A weak law, wisely and energetically administered, is far more effective than a strong law that is feebly enforced or not enforced at all.

In all state blue sky laws the teeth lie in the provisions for a discovery of facts, a compulsory and supervised discovery. Subpœna powers are granted the Security Commissioners with heavy penalties for perjury and disobedience, and where the provisions are enforced and are publicly known to be enforced, only corporations which can present a good balance sheet and only promoters whose records are presentable seek capital within these states. Let me demonstrate how in New York the provisions for discovery of themselves have served to protect stock-holders.

THE MARTIN ACT OF NEW YORK

The City of New York is perhaps the financial capital of the world. Over 5000 corporations a month are organized in the State of New York. On some days over three million shares of stocks are traded in on the New York Stock Exchange. There are approximately five thousand dealers in securities registered in my state. Almost every large corporation in the country has its main office there. Thousands of corporations locate their transfer offices there. Billions of dollars are loaned by the banks of New York on collateral consisting of corporate shares. The business of this entire nation is inextricably interwoven with the purchasing and selling and transfer of corporate securities in the City of New York.

A license law restricting these transfers of securities in New York State preliminary to a thorough investigation would choke business, not only in the state, but in the entire United States.

The Martin Act permits the free sale of any stocks or securities in the State of New York provided they are sold without any misrepresentation or concealment of their real nature. On the other hand, no security can be safely sold under the provisions of this act if its character is in any way misrepresented.

It has been estimated that over $1,700,000,000 is taken from the public annually by stock swindles. If this estimate includes fraudulent promotions, watered stock, wash sales on rigged stock markets, fraudulent reorganizations, bonds secured by mortgages on over-appraised real estate, bucket shop operations and other forms of frenzied finance, then I say the estimate is over-modest.

Over three-fourths of this loot, I venture to say, has been taken by transactions conducted in whole or part from the State of New York. The result of this is that to the average rural American "Wall Street" is synonymous with fraud and unjust and inequitable practices. Yet the proportion of unfair practices to the enormous volume of honest transactions is small.

Nevertheless, the fact remains that frauds and unfair and inequitable practices in the sales of stock in the State of New York were a public scandal and have earned the deep and abiding resentment of the public. Brokers and banking houses of at least respectable appearance have unloaded stock on the public at fancy prices based on inflated inventories, retaining enormous promotion profits secreted in items of good-will, patents and inventories. Manipulations of these stocks on the stock exchanges by means of pools, washing the sales back and forth at rising prices, have lured the public into purchases in the belief that large profits would follow. Bucket shops equipped with stock tickers, boards and mahogany furniture nested among the respectable addresses in every office building and reaped their harvest among the small wage-earners, encouraging gambling and speculation. Fallow mines and visionary oil wells bought for a song were capitalized at millions and sold by ex-convicts through apparently unbiased "tipster" papers which were in reality owned by the promoter. The entire mechanics of frenzied finance was in full operation.

The Martin Act is New York State's substitute for a blue sky law. As I said before, it is not a license law. It gives the Attorney-General of the state power to issue subpœnas and examine under oath any corporation or individual and command the production of any book or paper. The scope of this examination is limited to practices in the sales of securities. Obviously, any matter, however, that relates to the business of the corporation, its management, its property, is material in uncovering innuendo, concealment and fraud. Such practices as are found to be fraudulent, unjust and inequitable may be enjoined by our Supreme Court in a suit by the Attorney-General.

These injunctions do not absolutely prohibit sales of the offending stock. But as a condition of continuing they require corporations and promoters to make full disclosure of all facts and discontinue mis-statements and misrepresentations of facts. They require brokers to reveal their interest in these transactions and disclose secret profits and to actually buy and keep on hand their customers' stocks. In other words, these injunctions in the main force publicity of facts and true conditions on the theory that the investor or speculator is the person most competent to buy without the advice of the state. Also the injunctions move against the individual actors, bringing home to them as individuals the moral and legal responsibility for the corporate delinquency.

The teeth of this statute is the power in the Attorney-General to compel full and prompt disclosure of corporations' affairs.

The Martin Act was originally enacted in 1921 following the public outcry against the bucket-shop scandals of Wall Street. The criminal laws as a remedy had completely collapsed, due to the difficulty of obtaining evidence, and the necessity of proving the offense within its strict statutory definition.

Define fraud and you advise the swindler how to circumvent.

RESULTS OF ENFORCEMENT

However, until 1923 there was no appropriation for the enforcement of the Martin Act. And from that date until January 1, 1925, it was but feebly administered.

Commencing with January, 1925, however, the present Attorney-General of the State of New York, Albert Ottinger, obtained an appropriation from the Legislature of $100,000 and commenced a vigorous enforcement of this law. Questionnaires demanding complete information were broadcasted, not only to corporations organized in this state, but to corporations with offices out of the state. In two years over ten thousand witnesses were examined about the most confidential and diverse affairs of numerous corporations, banks, investment trusts, stock exchanges and brokerage houses. Attorney-General Ottinger has not hesitated to place under his subpœna the employes and officers of the large public utility corporations, the city departments, the New York stock exchanges, the Federal Reserve Bank, the large real estate bond and mortgage companies, and many of the large stock exchange houses in the city. Proceeding on the theory that corporations are but cloaks under which individuals act, we have invariably ignored the corporation and probed the actors.

The result of this general inquisition has been apparent. A general housecleaning has ensued in the State of New York and an exodus of undesirables to Florida, Boston, Canada and New Jersey.

Our bucket shops which have heretofore flourished like the bay tree have been almost completely eliminated. One large stock exchange and three or four small ones, and several commodity exchanges have been either closed or effectively regulated. Herds of confidence men, working through the rural districts, have been run out of the state. The "Roaring Forties" (our Great White Way) are no longer distinguished by crowds of high pressure stock salesmen. Unfair and unhealthy conditions in the real estate bond and mortgage houses are in process of voluntary correction. Several large reorganizations have been supervised. The district attorneys and the police are constantly referring complaints to us. Yet, with all our examinations, the number of injunctions we have obtained have been relatively small, not over two hundred and fifty.

From my observation this change of condition was brought about by our power to examine and discover. The ever-present threat of thorough ventilation, coupled with the announced determination of Attorney-General Ottinger to enforce the statute, has been a preventive just as effective as any actual injunctions to cease and desist.

It is my observation that the average person is a law-abiding citizen. Any law that appeals to his conscience and has the backing of public opinion will be obeyed generally without any particular threat of punishment. But a law that has no appeal to the conscience of the average man and is not backed by public opinion will meet public resistance no matter how severe the penalties.

A law merely designed to investigate corporations and publish information to satisfy public curiosity, even if constitutional, is odious. But any law that has for its object the prevention of frauds upon the public will obtain, and has always obtained, the full measure of public support, and it is that support that enables government to enforce the law. The Martin Fraud Act is such a law. It has the full public support and it is accomplishing its purpose.

NATIONAL ASSOCIATION OF SECURITY COMMISSIONERS

Frauds and unjust and inequitable practices in the sale of securities are not only intrastate, but they are often interstate. Thus, at the present time we have found a promoter or stock manipulator of a particularly evil reputation publishing and circulating a paper from the City of New York, a so-called tipster paper, in which the subscribers are brazenly advised to buy the stock of a copper mine in Idaho. Over 600,000 of these papers are mailed from New York City to subscribers all over the United States. The mine in Idaho is fallow and cost the promoter less than $10,000. Its stock is listed on the Boston curb market, where the prices have been washed from 50 cents to $5.00, giving the mine a capitalization of over $15,000,000. To expose this fraud investigations are required in three states, New York, Idaho and Massachusetts.

To meet situations like this the Security Commissioners of the several states have voluntarily organized a National Association of Security Commissioners, supported by appropriations from each of the member states. This association holds an annual convention and there formulates a policy of uniform principles and procedure, suggests legislation and considers mutual problems. A president and secretary are elected. During the year monthly bulletins are distributed of the proceedings pending before each Commissioner. The fullest co-operation is secured among the members and each is thereby provided with the machinery of the entire group of forty-five sovereign states, and of forty-five experienced and capable executives.

In actual practice the utmost harmony and co-operation is afforded by this association. Each learns by the experience of the other. Local problems are treated locally, while national and interstate problems are treated broadly. In the example I have just given, the State of Idaho is presenting me with full information and evidence of the Idaho mine, and the State of Massachusetts of the manipulations on the Boston Curb Market. New York is maintaining proceedings against the promoter to stop the fraud.

Thus it seems to me that the control of corporations which are, after all, merely groups of the citizens of the several states endowed with certain privileges, may be safely left to the states that created these privileges, and that this control is more properly exercised by policing sales of securities than by state or stockholders' interference with management. Perhaps in some instances the frauds are not exposed and corrected with the vigor expected by the public, but that, it seems to me, is the fault of administration rather than with the laws.

And as New York State is the source of a greater part of the public resentment, the responsibility is put up to the Attorney-General of that great state. As his deputy, charged by Mr. Ottinger with the responsibility of enforcing that law, I therefore say, he assumes that great responsibility, we have no alibis to offer, the law is entirely adequate with slight amendments, and we propose to enforce it to the limit, to the end that fraudulent and unjust and unfair practices in stocks shall discontinue. This includes the operations of any individuals whether done singly or with others, and whether done under the cloak of a corporation, partnership, stock exchange, investment trust, bank or any form of human organization. And in expressing myself thus, I do so with the conviction that we have the organized backing and co-operation of forty-five states of this nation.

Book Department

WHITE, LEONARD D. PH.D., Professor of Political Science. University of Chicago, *Public Administration*, p. ix, 495, New York The Macmillan Company, 1926.

This book presents a general picture of the organization, structure, methods, of activity and personnel of the executive branch of government. The author disclaims any intention to describe special departments of administration nor does he seek to cover the administrative law of state or nation.

The book is intended rather to present a series of problems which arise in nearly all public administrative work and to sketch some of the answers to these problems without dogmatic statement as to the merits of any. These reservations necessarily make the book a general one so that it is appropriately called an Introduction. There are several chapters on the importance and relation of administration to law-making and to the courts. The problem of centralization is considered. The structure of administrative departments and the movement to integrate the administration, that is, to bring its various isolated parts together into a comprehensive, responsible unity,—all these are stated as problems and their significance is clearly set forth.

Special attention is given to the question of personnel. Two-fifths of the volume are devoted to this topic, covering the historical background, the problem of morale in the civil service, the methods of recruiting, the classification of employes and their salaries, efficiency records and promotion, discipline and removal, pension systems and unions of public employes. The book closes with a chapter on trends of modern administration which should be read by every student in political science.

In the following interesting paragraphs, the author sets forth the substance of the preceding chapters: "These, then, are the main lines of development: the steady growth of the merit system with its implications of permanent employment and the provisions of a career, the constant limitation of the unregulated authority of the local area, the rise of the principle of administrative supervision and unified leadership, the emergence of the specialist and the expert, the origin of significant economic and professional organizations of public employes, and the rise of scientific inquiry into problems of government and administration. Each of these movements seems likely to project itself into the future for decades yet to come."

The author's style is clear and interesting. The choice of material is excellent and while there may be differences of opinion as to the proportions of the various topics, the general field is well covered.

In a volume of this size, intended only as an Introduction, one must not expect an intensive study of problems requiring long continued research. The author has held to his plan of stating rather than solving questions. An example is his discussion of the growing centralization of our system. Professor White points out that "the rise and fall of the local area as the pivot of our administrative system runs through most of our history. The process is almost universal, but is proceeding at different rates of speed in different parts of the country. . . . On a national scale the march toward Washington, which goes on without interruption, is now stirring lively protests on behalf of state rights. . . . The economic interpenetration of one part of the country with another, the amazing mobility of the population, the community of interest on a national scale in such matters as highways, health, labor supply, taxation, education, methods of communication, as well as the older communities of interest in such matters as foreign affairs, the army and the navy, demand political and administrative organization to correspond with national needs."

As centralization increases and as administrative work becomes more complex, scientific and expert in nature—"how can a working connection be maintained between the official and the public? Lacking such a connection, the danger of mutual misunderstanding and misconception is great."

One could wish that the author had written a full chapter here.

This problem which has been envisaged by many publicists is probably the greatest single question confronting the student of public administration to-day. The lack of contact between the public and the administration is even more serious than the absence of such contact between the lawmaker and the public.

Can good administration be popularized or must it always have that flavor of Prussianism which our people so strongly resent? Can we make the administration of the law thorough and scientific and yet retain its human responsiveness and popular sympathy?

There is urgent need of a whole series of scientific studies in this field of relations between Government and public. Some inquiries are already being prosecuted to ascertain the most feasible methods of maintaining contact between administrative bodies and business organizations, but the field as a whole is undeveloped and urgently calls for attention.

Other problems which perhaps deserve more space than has been allotted to them are the administration of business enterprises operated by Government, the participation of administrators in law-making, the possibilities of decentralizing Federal administration, etc.

It may be hoped that the book will see several editions and that it will be expanded to cover with greater fullness some of these important subjects.

JAMES T. YOUNG.

National Municipal League. *The Merit System in Government,* Pp. 170. New York: published by the National Municipal League, 1926.

This report was worked out during 1924 and 1925 by a conference committee representing the National Municipal League, the Governmental Research Conference, the National Civil Service Reform League, the National Assembly of Civil Service Commissions and the Bureau of Public Personnel Administration, and it is intended merely to give a definite statement of the functions which a public personnel agency should exercise and of the results which should be expected from their adequate performance.

This restricted object limits the usefulness of the book, which is still further diminished by differences of view among the members of the committee on some of the larger issues, notably on the preferred type of organization of the personnel agency. Here the committee limited itself to a bare statement of four possible types with arguments for and against each. May it not be, in view of the fact that such a distinguished committee failed to agree at this point, that something can be said for different types, any one of which may give reasonably good results? Put in other words, has not too much emphasis been placed in recent years on the form of organization and too little on the technique of the personnel agency?

Much of the subject matter of the volume has appeared in other sources. The committee worked without research assistance and was unable to conduct field studies to clarify points of disagreement. This must remain a source of regret to those who hoped to find new light on the problems involved.

The book has nevertheless the distinct merit of presenting a simple statement of current thought about the elements of public personnel administration and of offering a model civil service law (appendix 3). In view of the host of pressing problems which center about the subject, it must be a matter of regret that the committee limited itself to a task which perhaps inevitably remains sufficiently barren.

LEONARD D. WHITE.

HUNTER, MERLIN H. *Outlines of Public Finance.* Revised and Enlarged Edition. Pp. 538. Price, $3.25. New York: Harper and Brothers, 1926.

This revision of the textbook which appeared first in 1921 gives every appearance of having been thoroughly and painstakingly done. Professor Hunter apparently is not a member of that rather large group whose concept of revision is the insertion of new dates in the proper places with, perhaps, an occasional change in statistics. In this case there has been not only an inclusion of the latest statistics in order to bring the numerous tables up to date, and the recognition of legislative changes, but in addition, a sincere attempt has been made to note broader developments and changes in policy during the five-year period. An example of this occurs in the recognition of administrative reorganization of state government as a factor tending to secure more efficiency in expenditure.

Although the general viewpoint and method of approach remain practically unaltered, there has been considerable rearrangement in the order of treatment. At times this consists merely of changes of order within a particular chapter, with frequent transfers of complete topics from one chapter to another in order to secure a more logical and orderly treatment. In many cases, however, entire chapters have been transposed.

In addition, several new chapters have been added by expanding certain topics that formerly appeared as parts of rather bulky and incohesive chapters. For example, the discussion of public lands and public enterprises as a source of public revenue has been omitted from the chapter on the development of public revenue, and is now, with the addition of material on government ownership, elevated to the dignity of a separate chapter. A similar change has been made with respect to excises, capitation and business taxes, which were formerly treated together. The first two have been elevated to the rank of separate chapters, while the third is now one of a group of three chapters on "Taxes on Business," the other two being general corporation taxes, and taxes on special classes of corporations. New material appearing in this group has to do with the sales tax, taxes on motor transportation, automobile licenses, and the business license as used in southern states. Again, the treatment of public debts has been divided into two parts, entitled "general" and "administrative" considerations, with more emphasis on the purpose of borrowing, and new material on serial bonds, capital levy, and the settlement of the European debts. The income tax has also been divided into two parts, one on Federal, one on state systems, while the discussion of taxation now appears as two chapters—the nature of taxation, and justice in taxation. Although no separation of the chapter has been made, discussion of the single tax has been broadened to include taxes on mineral and forest lands, and the use of land taxes in foreign countries.

As contrasted with six chapters secured simply by separating and amplifying topics formerly treated elsewhere, only one completely new chapter appears, that being entitled "Characteristics of a Good Fiscal System." Much has been gained by separation, however, as it makes possible a more logical order of treatment, as evidenced by the grouping of the chapters on taxes on commodities, and it also tends to focus attention on subjects that were formerly apt to be ignored in the midst of other material.

As previously indicated, there has been little change in viewpoint either in general or on particular points. An exception occurs with respect to gift taxes. Formerly it was urged that gifts should be included in the category of inheritances for purposes of taxation, but in view of the administrative difficulties encountered by the Federal Government, this is now recognized as "extremely unsatisfactory." On the whole, however, the general approach remains unchanged. Those who formerly found the treatment unsatisfactory will doubtless find the new text equally so; those to whom it appealed will likely find the new edition much more teachable because of changes made.

Charles P. White.

Hanford, A. Chester: *Problems in Municipal Government.* Pp. 457. Chicago: A. W. Shaw Company, 1926.

"What is needed," declares Author Hanford, referring to the teaching of municipal government, "is a method of supplementing the lectures, text-books, and other readings which will assist the student in obtaining a more thorough mastery of the subject, develop his power of analysis, teach him how to apply his knowledge to actual problems, and help him to make the subject his own."

Recognizing the need, Professor Hanford has set out, laudably enough, to fill it. *Problems in Municipal Government* is his contribution. "There have been gathered together in this volume almost one hundred problems, each of which covers an actual case which has recently arisen or is now pending in a particular American city," he explains.

The student is given the facts in each case, followed by a series of questions intended to stimulate thought. Under the heading "Organization of the Police Department," for example, the organization of Cincinnati's police department prior to the Upson upheaval is set forth in detail. Footnote references to standard secondary works are included, and with these as a background the student is supposed to answer intelligently, or at least enthusiastically, the following questions: "What features in the organization of the police department of Cincinnati do you consider worthy of praise? What defects do you find? What changes would you recommend?" Other topics are similarly treated.

The table of contents follows rather closely the classification of city activities used by Munro in his *Municipal Government and Administration.* A number of subjects are inadequately treated. Traffic regulation, one of the outstanding problems of every American city, is dismissed casually with two brief problems headed "Parking Regulations" and "Establishment of Traffic Court." City planning and public utility regulation are accorded but slightly better treatment.

The volume covers a wide field, however, and must of necessity be concise. It is an interesting experiment in the application of specific problems to the study of general phenomena. Whether it will help the average student to "make the subject his own" is an open question.

AUSTIN F. MACDONALD.

MACKAY, ROBERT A. *The Unreformed Senate of Canada.* Pp. xvi, 284. London: Oxford University Press, 1926.

We have in this monograph on the Senate of the Dominion of Canada a work of unusual merit. The subject is of perennial interest across the lines and ought to be of equal interest on this side, where many are asking if the states may not wisely follow the provinces in the abolition of their upper houses. It is unthinkable that the Federal Senate of the United States can or should be abolished, however great our impatience with it at times, for it is protected by a compact of the states in the Constitution. Our author asserts that Quebec sees in the Dominion Senate a potential guardian of provincial rights, that abolition is unthinkable to French Canadians, and that the Dominion, no less than the United States, is bound legally and morally by a compact.

He shows, furthermore, that the United Provinces of Upper and Lower Canada found an elected upper house incompatible with the efficient working of the parliamentary system. Therefore the Dominion fathers substituted an appointed Senate which they intended to be not only a second house but secondary, though to a degree independent. One of the leaders of the period of federation predicted, however, that the system would prove to be an alternation of deadlock with single-chamber control. The detailed accounts with illustrative tables marshalled by Mr. Mackay seem in spite of his intention to mark the acuteness of the prediction, for only when the Senate is controlled by the party in opposition to the government does it become active in the rejection of measures presented by the government. Previous studies in Canadian affairs had convinced the reviewer of the utter uselessness of the Dominion Senate, which arouses itself from peaceful slumber only when the people in a general election have voted a change of policy to pronounce its veto upon the consummation of that policy in law, and which later in the course of years relaxes its opposition as its composition changes, finally subsiding into peaceful acquiescence again. But Mr. Mackay carefully reviews the outstanding measures rejected by the Senate, and maintains that then, if only then, the upper house performs its proper function, and registers the true and permanent will of the people, as against active minorities which have imposed their views upon a spineless ministry. The defense of the Senate is strongly pressed, but my own attitude to social legislation, measures for the promotion of temperance and the protection of labor, is too pronounced to agree with the author. For instance, he pictures the gray-haired lawyers of the Senate, zealous for the tried principles of the common law, vetoing every one of a series of acts designed to raise the age of consent; my reading in Blackstone shows how inadequate the old law of England was and in Stephens how the English Parliament raised the age of consent in 1887 to a point these senatorial lawyers thought would be promotive of immorality in Canada. Mr. Mackay would prolong these occasional spasms of obstruction till the disease becomes endemic.

Another activity of the Senate, not so bitterly resented, is the amendment of measures coming up from the House of Commons. This as proved by the detailed statements and illustrative tables is not intermittent but constant, rising no higher when the two houses are in opposition to each other than when they are in political accord. The leisurely body of experienced legislators here performs a function of real value, especially in the protection of property, the symmetrical development of the law and careful drafting.

This monograph has several valuable suggestions upon the functions which may well be conceded to the Senate. Just as now all divorce bills are first introduced in the Senate and the procedure is essentially judicial, so all private bills might be assigned to the Senate. Now the Senate, like the House of Lords, gives admirable service in the consideration of such bills. Members of the lower house no doubt desire to introduce private bills and further their passage, but the procedure ought to be impersonal and judicial. At the present time the number of such bills introduced in the Senate tends to increase, yet the great majority are introduced in the lower house.

Non-contentious government bills almost always make their first appearance in the lower house, introduced by heads of departments, for seldom is there more than a single department head in the Senate, and sometimes none at all. If every minister had the privilege of the floor in both houses it might often be convenient for ministers to introduce these non-partisan bills in the Senate. Partisan bills occupy much attention of the members of the House of Commons and non-partisan bills do not have the prompt and adequate attention they would receive in the Senate if introduced there early in the session.

Mr. Mackay proposes changes in the composition of the Senate, which, judging from somewhat similar provisions in other national upper houses, would greatly enhance the utility and dignity of the Senate, without unduly increasing its independence. He proposes a Senate that shall not only represent the four sections of the country, but the various shades of political opinion. One-half of the Senators would be elected by the members of the House of Commons, one-third renewed at the beginning of each newly elected Parliament. The members from a section would elect their Senators by proportional representation from candidates with the qualification of previous election to the Senate, House of Commons, or provincial legislature. The remaining half of the Senate would be appointed by the government, renewed as in the case of elected members, part from tried administrators from the several sections, and part nominated by various national associations. Thus functional representation and the valuable co-operation of trained administrators would find recognition in the composition of the Senate.

Altogether the book is sane, well-documented, and informing.

CHARLES H. MAXSON.

ROGERS, LINDSAY. *The American Senate*. Pp. xii. 285. New York: Alfred A. Knopf. 1926.

The author does not attempt in this brief volume on the Senate of the United States to write either a comprehensive history or a dispassionate analysis of the functioning of that venerable institution. He states in his preface that he expects to argue a point of view. His view is this: "The undemocratic, usurping Senate is the indispensable check and balance in the American system, and only complete freedom of debate permits it to play this rôle." The author feels very strongly that it would be clearly inadvisable to change the present rule of freedom of debate in the Senate, since, in his opinion, senatorial investigations of the executive would become less numerous and less effective, if a Senate majority could act whenever it cared to act.

The author devotes a comparatively small portion of his volume to the Senate as a legislative chamber. "Closure," "Congressional Investigations," "Presidential Propaganda and the Senate," "Forum of the Nation and Critic of the Executive" are the subjects which chiefly engage the attention of the author. It is in the chapters dealing with these subjects that the author is at his best. In emphasizing the importance of preserving inviolate the informing function of Congress, he brings forward an aspect of the closure controversy too long neglected and too frequently unnoticed. Herein lies the chief merit of the volume.

M. L. FAUST.

JENNINGS, W. W. *History of Economic Progress in the United States.* Pp. xvi, 822. Price, $5.00. New York: Thomas Crowell & Company.

From time to time for almost a generation we have been favored with various American economic histories. They have increased considerably in size, but their general outline has remained strikingly similar. Chapters are devoted to agriculture, manufacturing, commerce and finance in the Colonial, early national, ante-bellum, post-bellum, and 20th century periods. This has given an unreality and statistical quality to our economic story, which does its best to destroy the interest of students. There are few portions of history more striking or more significant than the progress of our economic development, but to date no one seems to have grasped its potentialities as a vital possibility. Mr. Jennings' book is the latest in the line. It is a monument of patience and research, its scope is really tremendous. Its 748 pages of text, its statistical appendices and its bibliographies contain an arsenal of facts and figures which is staggering; not a word is wasted in attempting embellishment, the facts are there and nothing but the facts. But of the significance and interpretation of these facts all that is attempted is a strain of evangelism which finally bursts forth as the writer views the 20th century and sees what he thinks is needed to save America. This volume will be an invaluable reference book and an indispensable aid to any one studying our economic history; for producing this the author cannot be praised too highly, but the vital synthesized coherent story of one of the greatest episodes of economic history has yet to be written.

ROY F. NICHOLS.

ISE, JOHN. *The United States Oil Policy.* Pp. x, 547. Price, $7.50. New Haven: Yale University Press, 1926.

The theme of this volume is conservation of petroleum. Professor Ise's approach to the problem is an historical and research rather than a philosophical one. This is, of course, proper, but it leads him into difficulties that make the book unreadable. Mingled with the text on every page are dozens of statistical items that soon pall and lose their significance. It was the author's duty to collate and interpret these.

An historical analysis of each of the major fields occupies one-third of the book and is well done, as is also the discussion of the public oil land problem. Chapters on the questions of substitutes and foreign supplies and on conclusions conclude the treatment. Copious references increase the value of the work.

A. H. WILLIAMS.

REED, HAROLD L. *Principles of Corporation Finance.* Pp. 412. Boston: Houghton Mifflin Company, 1926.

In this work the author has organized the materials of corporation finance in such a way that the student may "readily comprehend the relationship of the different aspects of the subject." His avowed plan is to follow through the life of the business corporation from its inception to its dissolution. The work is divided into five parts, the first dealing with the financial problems of a new corporate enterprise, the second with current operations, the third with earnings, the fourth with corporate expansions and the fifth with failures and reorganizations.

It is difficult to understand why the author begins his treatise with an extended discussion of no par value stock, overcapitalization, bonus shares, assessible stock and other features of different classes of stock before analyzing the rôle played by the promoter and the steps necessary in forming a new business enterprise. Again, the logic of discussing the justification of the work of the promoter before describing the functions which he performs may also be questioned. To enumerate the results of reorganization before giving a description of methods of reorganization likewise appears to be putting the cart before the horse.

The lack of concrete illustrative materials and of substantiating evidence to support the many general observations seems to the reviewer to be an outstanding weakness of the treatise. It is doubtful whether such generalizations as the following could be corroborated by available data: "Those who assume the risk of shareholders will demand, as compensation, a share in control" (p. 310). "Ordinarily the new issue will be for as many shares as are already outstanding" (p. 316). "At any rate, available evidence seems to indicate that monopoly powers possess far greater opportunities in the case of investment than in the case of commercial banking" (p. 338). Many such sweeping statements as these, unsupported by any corroborating evidence, might be cited.

In an advanced treatise, such as this work purports to be, a more detailed analysis of many phases of corporate financing would also be desirable. Maintenance, betterments, depreciation financing, underwriting syndicates, corporate leases, equipment trust certificates, reorganization of capital account, reorganization by court order and similar topics are either omitted from the discussion entirely or receive only very inadequate treatment.

In spite of these and similar weaknesses, however, the book may be profitably read by the student of corporation finance, because of the many stimulating suggestions which it contains. KARL SCHOLZ.

REED, THOMAS H. Professor of Municipal Government in the University of Michigan. *Municipal Government in the United States*. Pp. 368. New York: The Century Company, 1926.

Professor Reed's book constitutes a valuable and useful addition to the Century Political Science Series. The chapters dealing with the historical development of municipal institutions in the United States are so admirably conceived and executed that one cannot fail to hope that Professor Reed will not abandon his early enthusiasm for the writing of a history of municipal government that will be, to use his own phrase, "comprehensive and definitive." Equally commendable are the simplicity, precision and clarity of the chapters describing the legal position of the city in the United States.

Unfortunately one cannot manifest a similar degree of enthusiasm for some of the later chapters of the book. Chapter XVII, entitled "The Perfection of Administration," may be mentioned in particular. By comparison with other portions of the book this chapter is so superficial and fragmentary as to impress one as being scarcely more than an afterthought.

One who writes in the field of municipal government must deal with a larger and more varied mass of minute fact material than is to be encountered in any other division of political science, and hence finds it extremely difficult to escape the charge of inaccuracy. It is therefore very greatly to Professor Reed's credit that the inaccuracies which appear in his book are so few and of such slight importance.

As to the suitability of this book for use as an undergraduate text-book opinions are bound to differ. From the standpoint of the reviewer it would serve this purpose better if it dealt more with the functional and operative side of city government than with the historical and legal aspects.

CHESTER H. MAXEY.

COLLINS, CHARLES W. *The Branch Bank Question*. Pp. xi, 182. Price, $1.75. New York: The Macmillan Company, 1926.

Mr. Collins has presented, in this well-written book, a carefully worked out history of the branch banking controversy in America, especially in its political and legislative aspects. The story has been brought down to December, 1925, since which time little of significance has happened to the question, so that the account is still fairly up-to-date.

The facts are, briefly, that twenty-eight states do not allow any form of branch banking, while twenty states permit branch banking, in some cases city-wide and in others state-wide, to state chartered banks. In the branch banking states national banks are being subjected to a competition which is proving too strong for many of them. To their aid have come several rulings of the Comptroller of the Currency permitting national banks in certain cities to open branch "offices" in the same city in which the bank is located. This informal arrangement does not seem to meet the situation entirely, especially in states like California which permit state-wide branch banking to state banks. Accordingly the McFadden Bill, giving limited branch banking powers to national banks in states in which state banks have such powers and curtailing to some extent Federal Reserve membership to state banks practising extensive branch banking, has been battling its way in the past two Congresses. The bill seems to have a decisive majority in favor of its main features, but encounters serious disagreement over details, especially whether or not the Federal Reserve System is to be open in the future to banks operating state-wide branches.

While the author discusses ably the legal and political turns, one misses a thoroughgoing analysis of the economic issues—involved issues—which will ultimately decide the legal and political outcome. We look in vain for a discussion of branch banking's advantages and disadvantages to borrowers and depositors, the advisibility of having the community's banking resources controlled by absentees, the effect of branch banking on interest rates, and the tendency toward the parallel development of large-scale industry and finance.

The work is, however, as far as it goes, a valuable treatise and forms a welcome addition to the literature of banking.

Albert S. Keister.

Foerster, Robert F., and Dietel, Elsie H. *Employee Stock Ownership in the United States.* Pp. viii, 174. Price, $1.50. Pub. by the *Industrial Relations Section,* Princeton University, 1926.

This treatise is an inquiry into the nature of upward of three hundred employee stock ownership plans, as well as a discussion of the general questions raised by the provisions of these various plans. The authors make no attempt to evaluate the relative merits of the plans studied, nor do they set forth what may be termed a model employee stock ownership plan. In their opinion the time is not yet ripe for a "succient statement of the principles to be observed in constructing such a plan." The appendix contains a summary of the provisions of the plans examined, together with the dates of their inauguration, and wherever possible, the extent to which employees have accepted the offers to participate in stock ownership.

The treatise, in general, appears to lack that scientific precision of phraseology which one should like to find in an objective, factual analysis of materials. Expressions such as "sometimes," "in many instances," "usually," "generally," "in a few instances," and the like convey no precise idea of the relative importance of the specific provisions discussed. Attention might also be called to the error in the use of the expression "treasury shares" on page 71. The authors make the statement "Whether treasury shares are sold or shares previously outstanding and bought by the company in the open market, no direct profit accrues to the company from their sale." The inference here is that treasury shares consist of authorized but unissued shares, which have not been outstanding previously. This is contrary to the accepted usage of the expression "treasury shares."

These minor adverse criticisms, however, can scarcely detract from the merits of an otherwise valuable and timely presentation of a subject which appears to be attracting ever wider attention among financiers and industrial managers.

Karl Scholz.

Herrold, Lloyd D. *Advertising Copy—Principles and Practice.* Pp. xiv, 525. Price, $6.00. Chicago and New York: A. W. Shaw Company.

In this book Professor Herrold treats one of the technical phases of advertising in a new way. He develops the idea that copy should be considered not as an independent and unrelated unit but as an integral part of a complete advertising campaign. We are, therefore, shown the necessity for complete analysis and thorough unification of the elements of copy with the sales function and its relation to the finished campaign.

The text is concerned with writing copy for particular media. In this respect a method is used which involves an analysis of the medium, the type of copy to be used and the reasons for that use. This is a new procedure and differentiates the book from others in the immediate field. The psychological aspects as set forth in the chapter concerning the appeals to be selected for a campaign is descriptive rather than creative in its approach.

There are many illustrations and much specific data with which the theorist may work. This is particularly valuable for the teachers who have deplored the scarcity of factual campaign material. On the other hand those in the practical field see comments upon their own handiwork from the point of view of the analyst. The chapter upon "The Analysis Preceding the Writing of Copy" can be used by all those interested in research method, for it effectively outlines the actual procedure employed by research departments in advertising agencies before the copy is prepared.

Although copy was effectively treated in Professor Herrold's former book, a distinct contribution has been made in this volume by reason of its completeness.

J. RUSSELL DOUBMAN.

REED, RUTH. *Negro Illegitimacy in New York City.* Pp. 134. Price, $2.25. New York: Columbia University Press, 1926.

The appearance of this brochure (No. 277 of the Studies in History, Economics and Public Law edited by the Faculty of Political Science of Columbia University) upon a controversial phase of the Negro question will be greatly valued by those interested in a scientific study of this problem.

With but five hundred cases—the sum total available—Miss Reed has made a thorough scholarly and sympathetic study of this unconventional condition among Negro women of New York. She has given us "an analysis of the chief facts in the personal and environmental history of a group of unmarried Negro mothers who have at one time or another during the past five years come to the attention of the social agencies of New York City." It is a stark piece of work well done. There is an excellent table of contents, a complete bibliography, tables intelligible to the layman, a brief history of society and the unmarried mother in general and of the Negro unmarried mother in particular.

The student of social problems or of history should welcome as invaluable data Miss Reed's compact study. It is a crowded volume and shows a few effects of its abbreviation, but it is remarkable for its judicial treatment of an opinionated subject. Columbia University Press has indeed with this volume added to its collection admirable data for future studies for comparison. Miss Reed points out, however, that there exists no such data or material for other groups in this country.

SADIE MOSSELL ALEXANDER.

WEBER, GUSTAVUS A. *The Hydrographic Office—Its History, Activities and Organizations.* No. 42. Pp. xii, 112. Price, $1.00. United States Service Monographs. Institute for Government Research. Baltimore, Md.: The Johns Hopkins Press.

SMITH, DARRELL HEVENOR. *The Bureau of Naturalization, Its History, Activities and Organization.* No. 43. Pp. xii, 108. Price, $1.00.

TOBEY, JAMES A. *The National Government and Public Health.* Pp. xviii, 423. Price, $3.00.

HUNT, ELIZABETH PINNEY. *Arthur Young, on Industry and Economics.* Pp. 183. Bryn Mawr, Pa., 1926.

FISHER, LILLIAN ESTELLE. *Viceregal Administration in the Spanish American Colonies.* Pp. x, 397. Berkeley, California: University of California Press, 1926.

Where to Turn. Pp. 44, Price, 25 cents. Philadelphia: Public Charities Association, Publication No. 1, 1926.

The first distribution of an attractive handbook, entitled *Where to Turn* is just being made by the Welfare Information Bureau of the Public Charities Association of Pennsylvania. The pamphlet briefly describes the various types of welfare activities and gives a concise directory of national, state and local social service agencies.

Index

Abercrombie, John W. 103.

ANDREWS, LINCOLN C. Prohibition Enforcement as a Phase of Federal Versus State Jurisdiction in American Life, 77–87.

Appropriations, congressional, for education, 102.

BELKNAP, W. B. Ways and Means Toward Equitable Adjustments of State and Federal Taxes, 9–15.

BLISS, ZENAS W. Why Federal and State Bases of Taxation Should Be Separate, 21–7.

Blue sky laws, passage of, 151, 153.

Bucket-shop scandals, 153.

Business in New York, conditions of, 152–3.

CADWALADER, THOMAS F. The Defeat of the Twentieth Amendment, 65–9.

CAPEN, SAMUEL P. Wanted: An Active Co-ordinated Government Bureau of Education, 97–101.

Centralization: dangers of, 68; issue of, against decentralization, 127; tendency toward (Federal government), 26.

CHENEY, HOWELL. State Versus Federal Regulation of the Labor of Children, 41–58.

Child labor: amendment, 28–9, 34, 35–7, 62, 65, 68; committee, national, 32, 70–1; decline of, 40; law, first and second, 90–1; success of, 68; numbers employed, 37–40.

CHILD LABOR, IS, A GOVERNMENT OR STATE QUESTION? James A. Emery, 34–40.

CHILD LABOR LEGISLATION, THE STATES RESPONSIBILITY TOWARD. Paul U. Kellogg, 59–64.

CHILD LABOR QUESTION AND THE FEDERAL GOVERNMENT, THE. Owen R. Lovejoy, 28–33.

Children, number employed in industry, 31, decrease in, 41.

Commerce, Federal control of, 145, 146; regulation of, by Congress, 143; state-Federal jurisdiction, problem of, 143–5.

Compensation laws, shortcomings of, 60–2.

CONCENTRATION OF CONTROL IN POWER, THE. H. S. Raushenbush, 118–25.

"Concurrent power," meaning of, 92–3.

Congress, duty of, *re* commercial control, 148.

Constitution, U. S., present day needs and the, 4.

Consumers' League of Pa., child labor study of, 61.

Controlling companies, *re* power, stock and holdings of, 120.

CONTROVERSIAL SUBJECT OF FEDERAL CONTROL IN EDUCATION, THE. Frank Pierrepont Graves, 95–6.

Co-operation, state and Federal, need for, 72.

Corporate transactions, need for publicity in, 150.

Corporations, make-up of, 149, 150; state control of, 155.

Court decisions, 141, 142; *re* child labor law, 90; *re* Federal subsidy system, 103; *re* Federal Trade Commission, 144; *re* industries, fixing rates, 110; *re* rate-base, 128.

DEFEAT OF THE TWENTIETH AMENDMENT, THE. Thomas F. Cadwalader, 65–9.

Demand, increasing, for child labor, 31.

DILEMMA OF GIANT POWER REGULATION, THE. John H. Gray, 110–7.

Double jeopardy problem, 92.

Education: fallacies *re*, 106–7; and labor, relation between, 45; new situation in, 107–8; Federal control of, proposed legislation for, 96; present needs in, 95; public, per capita cost, 43; proposed Federal bill and purpose of, 96.

EDUCATION, THE CONTROVERSIAL SUBJECT OF FEDERAL CONTROL IN. Frank Pierrepont Graves, 95–6.

EDUCATION, FEDERAL SUBSIDIES FOR. Austin F. Macdonald, 102–5.

EDUCATION, STATE AND FEDERAL JURISDICTION IN. Charles R. Mann, 106–9.

EDUCATION, WANTED: AN ACTIVE CO-ORDINATED GOVERNMENT BUREAU OF. Samuel P. Capen, 97–101.

Educational bills before Congress, 97; system, building up to fit child's needs, 32.

Eighty per cent credit clause, 23.

Electrical industry, national problem of, 113; present situation in, 112; suggestions toward, 113–7.

Electricity, interstate control of, 111.

EMERY, JAMES A. Is Child Labor a Government of State Question? 34–40.

Employes, as shareholders of stock, 150.

Employment, decline of child, 40.

Federal control of commerce, courses open *re*, 146; proponents of, 145, 146.

FEDERAL CO-OPERATION IN STATE SOURCES OF REVENUE. Mark Graves, 16–20.

Federal Power Commission, power of, 134; supervision of, over water powers, 132–3.

Federal power and progress, 73.

FEDERAL REGULATION OF CORPORATIONS UNDER THE COMMERCE CLAUSE. Abram F. Myers, 143–8.

Federal Revenue Act, 23.

FEDERAL AND STATE RELATIONS IN THE CONTROL OF POWER DEVELOPMENT AND DISTRIBUTION Philip P. Wells, 126–31.
FEDERAL SUBSIDIES FOR EDUCATION. Austin F. Macdonald, 102–5.
FISCAL SYSTEM, NEED FOR READJUSTING THE, OF THE UNITED STATES. Edwin R. A. Seligman, 1–8.
Federal Trade Commission, 140.
FEDERAL VERSUS STATE JURISDICTION OVER POWER DEVELOPMENT AND ITS SUPERVISION. O. C. Merrill, 132–7.
Federal Water Power Act, 128.
Fifty-fifty system, 102.
French compensation laws, 60.

Giant Power, dual control of, impossibility of, 11[illegible]; legislation, 130.
GIANT POWER REGULATION, THE DILEMMA OF. John H. Gray, 110–7.
Government: Federal, 108; criticism of, 67; function of, 97–8; powers of, 145; present activities of, 98–9; what is wanted from, 99, 100: change in, 16; interference, in business, 139, 140, 151; in prohibition and child labor, 37, 59; relation of, state to Federal, 9; supervision, inheritance and estate taxes, difficulties of, 22.
GRAVES, FRANK PIERREPONT. The Controversial Subject of Federal Control in Education, 95–6.
GRAVES, MARK. Federal Co-operation in State Sources of Revenue, 16–20.
GRAY, JOHN H. The Dilemma of Giant Power Regulation, 110–7.

Hamilton, Alexander, work of, 2.
Holding companies, control by, of electrical industry, 112; danger in, contracts, 123; financing, affect of, on operating companies, 14.
Holmes, Justice, 141.

Illiteracy, condition of, in states, 44.
Individual: protecting liberty of, 4; rights of, 149.
Industries, need for regulation of, 110.
Interstate commerce, Federal control of, 3.
Interstate transmission, problem of, 135–7.
Investor, money accruing to, 123.
IS CHILD LABOR A GOVERNMENT OR STATE QUESTION? James A. Emery, 34–40.

Jurisdiction: conflict between Federal and state, 9; economic factor in, 88; problem of, 9, 10; state, where ends, 135.
Jurisdictional disputes, classes of, 12–3; rôle of social factor in, 89.

Kelley, Mrs. Florence, 61.
KELLOGG, PAUL U. The State's Responsibility Toward Child Labor Legislation, 59–64.
Keynes, J. M. 90.

Law enforcement, problem of, 74.
Licenses, Federal, measures for, 147.
LINDSAY, SAMUEL MCCUNE. Social Aspects of Federal and State Control, 83–94.
Liquors, prohibition of, state and Federal bickering *re*, 77.
LOVEJOY, OWEN R. The Child Labor Question and the Federal Government, 28–33.

MACDONALD, AUSTIN F. Federal Subsidies for Education, 102–5.
MANN, CHARLES R. State and Federal Jurisdiction in Education, 106–9.
Manufacturers, interest of, in child problem, 40.
Martin Act (New York), 152, 153, 154.
MERRILL, O. C. Federal Versus State Jurisdiction Over Power Development and Its Supervision, 132–7.
Minimum standards of child labor, 70.
Monopolies, control of, 74–5.
MONTAGUE, GILBERT. More Government in Business—Does Wall Street Need It or Main Street Want It? 138–42.
MORE GOVERNMENT IN BUSINESS—DOES WALL STREET NEED IT OR MAIN STREET WANT IT? Gilbert Montague, 138–42.
MYERS, ABRAM F. Federal Regulation of Corporations Under the Commerce Clause, 143–8.

National Association of Security Commissioners, formation of, 155.
National Education Association, work of, 95.
National organizations, aid of, *re* state problems, 13.
National Tax Association, conference called by, 12.
NEED FOR READJUSTING THE FISCAL SYSTEM OF THE UNITED STATES. Edwin R. A. Seligman, 1–8.

PINCHOT, GIFFORD. The State, the Nation and the People's Needs, 72–6.
Politics, influence of economics on, 1.
POWER DEVELOPMENT, FEDERAL VERSUS STATE JURISDICTION OVER, AND ITS SUPERVISION. O. C. Merrill, 132–7.
Power development, problem of, 132; public control of, factors in, 118–9.
Prohibition Amendment, 4, 91; enforcement, 83–6; move toward national, 79; reaction to, 81–3.
PROHIBITION ENFORCEMENT AS A PHASE OF FEDERAL VERSUS STATE JURISDICTION IN AMERICAN LIFE. Lincoln C. Andrews, 77–87.
Public opinion, 142.
Public, a silent, *re* child labor amendment, 29–30.

Railroads, need for unified national, 138.
"Rate base," 128.
RAUSHENBUSH, H. S. The Concentration of Control in Power, 118–25.
Registration area of states, tests of, 59, 60.
Regulation, of water power, etc., 129; solution of, 130.
Resources, natural, conservation of, 75.
Revenue: Federal, 6, 7; securing, 5; solution of, 8; independent for U. S. government, 3; securing adequate, for American municipalities, 17.
REVENUE, FEDERAL CO-OPERATION IN STATE SOURCES OF. Mark Graves, 16–20.

School: attendance, 42; problem and child labor, 39; relation of state wealth to, 106.
Security issues, regulation of, 128.
SELIGMAN, EDWIN R. A. Need for Readjusting the Fiscal System of the United States, 1–8.
SOCIAL ASPECTS OF FEDERAL AND STATE CONTROL. Samuel McCune Lindsay, 88–94.
South, educational responsibilities of *vs.* north, 44.
State, authority of, 149; and nation, relation between, 126; objections, to Federal aid, 27; standards *re* child labor, varying, 30.
STATE AND FEDERAL JURISDICTION IN EDUCATION. Charles R. Mann, 106–9.
STATE, THE NATION AND THE PEOPLE'S NEEDS, THE. Gifford Pinchot, 72–6.
STATE REGULATION OF CORPORATIONS BY POLICING SALES OF SECURITIES, Keyes Winter, 149–55.
STATE VERSUS FEDERAL REGULATION OF THE LABOR OF CHILDREN. Howell Cheney, 41–58.
STATE'S RESPONSIBILITY TOWARD CHILD LABOR LEGISLATION, THE. Paul U. Kellogg, 59–64.
Stockholder; concept of, in large corporation, 138; information entitled to, 139.
Subsidies, Federal, state opinions *re*, 104; opposition to, 103; similarity in, 102.
SWIFT, WILEY H. What the National Child Labor Committee Is Doing at the Present Time, 70–1.

Tax: estate, Federal Government and, 18; income and inheritance, 6, 12, 17, 18, 21, 24.
Taxes, Federal, 5–6; problem of death and estate, 10–11; income, exemption, 25; real estate, 6, 7.

WANTED: AN ACTIVE CO-ORDINATED GOVERNMENT BUREAU OF EDUCATION. Samuel P. Capen, 97–101.
Water power, Federal and state supervision of, 132–3.
WAYS AND MEANS TOWARD EQUITABLE ADJUSTMENTS OF STATE AND FEDERAL TAXES. W. B. Belknap, 9–15.
Wealth *vs.* expenditures, state, 43.
Webb-Kenyon Act, 78.
WELLS, PHILIP P. Federal and State Relations in the Control of Power Development and Distribution, 126–31.
WHAT THE NATIONAL CHILD LABOR COMMITTEE IS DOING AT THE PRESENT TIME. Wiley H. Swift, 70–1.
WHY FEDERAL AND STATE BASES OF TAXATION SHOULD BE SEPARATE. Zenas W. Bliss, 21–7.
WINTER, KEYES. State Regulation of Corporations by Policing Sales of Securities, 149–55.

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CONTENTS

PAGE
FOREWORD ... v

PART I. LIFE INSURANCE

THE RÔLE OF THE LIFE INSURANCE COMPANY IN HEALTH CONSERVATION PROGRAMS ... 1
Lee K. Frankel, Ph.D., Second Vice-President, Metropolitan Life Insurance Company

CO-OPERATION BETWEEN LIFE INSURANCE AND TRUST COMPANIES ... 9
Edward A. Woods, President and Manager, The Edward A. Woods Company

INSURANCE OF SUBSTANDARD LIVES ... 16
Robert Henderson, F.I.A., F.A.S., Second Vice-President and Actuary, The Equitable Life Assurance Society of the United States

INVESTMENT TENDENCIES OF LIFE INSURANCE COMPANIES ... 21
Frederick H. Ecker, LL.D., Vice-President, Metropolitan Life Insurance Company

GROUP LIFE INSURANCE ... 27
William J. Graham, F.A.S., Second Vice-President, The Equitable Life Assurance Society of the United States

LIFE INSURANCE COMPANIES AND PENSION PLANS ... 34
M. Albert Linton, F.A.S., F.I.A., Vice-President, Provident Mutual Life Insurance Company of Philadelphia

THE DEVELOPMENT OF ADEQUATE PROTECTION FOR THE DISABLED LIFE INSURANCE POLICYHOLDER ... 42
Edward W. Marshall, F.A.S., F.A.I.A., Associate Actuary, Provident Mutual Life Insurance Company of Philadelphia

LIFE INSURANCE AS AN AID TO EDUCATION AND PHILANTHROPY ... 53
John A. Stevenson, Ph.D., Second Vice-President, The Equitable Life Assurance Society of the United States

THE MODERN LIFE UNDERWRITER ... 58
John Marshall Holcombe, Jr., LL.B., Manager, Life Insurance Sales Research Bureau

NON-MEDICAL LIFE INSURANCE ... 64
Harold F. Larkin, A.A.S., Vice-President, The Connecticut Mutual Life Insurance Company

SALARY SAVINGS INSURANCE ... 70
Richard L. Place, Aetna Life Insurance Company

INSPECTION REPORTS ON PERSONS AS A FACTOR IN LIFE INSURANCE ... 77
J. Anderson Fitzgerald, Ph.D., Dean, School of Business Administration, University of Texas

BENEFICIARY PROVISIONS UNDER MODERN LIFE INSURANCE POLICIES ... 86
Lelia E. Thompson, LL.B., Attorney, The Connecticut Mutual Life Insurance Company

FRATERNAL LIFE INSURANCE ... 97
Charles K. Knight, Ph.D., Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania

PART II. PROPERTY INSURANCE

THE FIRE PREVENTION WORK OF STOCK FIRE INSURANCE COMPANIES ... 103
H. A. Smith, President, National Fire Insurance Company of Hartford, and Chairman, Advisory Insurance Committee of the Chamber of Commerce of the United States

USE AND OCCUPANCY INSURANCE ... 108
Willis O. Robb, Manager, New York Fire Insurance Exchange

THE REGULATION OF FIRE INSURANCE RATES ... 114
Robert Riegel, Ph.D., Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania

WEATHER FORMS OF INSURANCE 121
G. Wright Hoffman, Ph.D , Assistant Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania

THE GUARANTEE OF MORTGAGE BONDS BY SURETY COMPANIES 131
Edward L. McKenna, Ph D., Assistant Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania

PART III. CASUALTY INSURANCE

INSURANCE COMPANIES AND ACCIDENT PREVENTION 137
James S. Kemper, President, Lumbermens Mutual Casualty Company, Chicago, Ill.

MODERN TRENDS IN ACCIDENT AND HEALTH INSURANCE 144
Austin J. Lilly, LL.B , General Counsel, Maryland Casualty Company, Fellow Insurance Institute of America

AUTOMOBILE INSURANCE 154
H. F. Stellwagen, Secretary-Treasurer, National Bureau of Casualty and Surety Underwriters; formerly Manager of its Automobile Department

COMPULSORY AUTOMOBILE INSURANCE 163
Harry J. Loman, Ph D., Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania

CURRENT RATE-MAKING PROCEDURE IN WORKMEN'S COMPENSATION INSURANCE 171
C. A. Kulp, Ph D., Assistant Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania

PART IV. IMPORTANT PROBLEMS OF GENERAL APPLICATION

MULTIPLE LINE COVERAGE 181
Benjamin Rush, President, Insurance Company of North America

TENDENCIES IN STATE SUPERVISION OF INSURANCE 185
William Brosmith, Vice-President and General Counsel, The Travelers' Insurance Company; Chairman, Committee on Insurance Law of the American Bar Association

SPECIAL INSURANCE TAXES 191
James L. Madden, J.D., Manager, Insurance Department, Chamber of Commerce of the United States

STATE INSURANCE FUNDS—OPTIONAL AND MONOPOLISTIC 202
David McCahan, Assistant Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania

INSURANCE INSTRUCTION IN AMERICAN UNIVERSITIES AND COLLEGES 213
S. S. Huebner, Ph D , Professor of Insurance and Commerce, Wharton School of Finance, and Commerce, University of Pennsylvania

REPORT OF THE BOARD OF DIRECTORS 220

BOOK DEPARTMENT 224

INDEX 235

EDITOR'S FOREWORD

This volume on *Modern Insurance Tendencies* is a successor to the volume on *Modern Insurance Problems* published by the American Academy ten years ago in March, 1917. That volume sought to record the outstanding changes and tendencies of the preceding ten to twenty years and enjoyed a wide circulation. The present volume aims to accomplish the same general purpose for the ten years that have followed. In fact, it was the continued demand for the first volume, even after such considerable lapse of time, that suggested the desirability of issuing a new and up-to-date volume on the same theme.

The changes wrought within the field of insurance during the past ten years have been numerous and important. Of outstanding significance is the remarkable increase in the volume of insurance as regards each of the three major types of underwriting, namely, life, property and casualty insurance. During 1925 American life insurance companies collected in premiums nearly $2,384,000,000, casualty companies operating in the United States $777,000,000, and property insurance companies of all kinds operating in the State of New York nearly $1,787,000,000, or a total of nearly five billion dollars ($4,948,000,000). Compared with the premium income of 1915, the 1925 figures indicate a decennial growth of 204 per cent for life insurance, 102 per cent for fire, marine and the other forms of property insurance, and 385 per cent for the various forms of casualty insurance. If to the preceding total there be added (1) the cost of insurance protection granted by the numerous property insurers not licensed to do business in New York, the numerous municipal, state and Federal insurance funds along many lines, the many mutual aid societies and fraternal orders, and the large number of self-insurance funds along fire, marine, life, compensation and pension lines, and (2) the cost of the large volume of American insurance placed directly with unauthorized foreign insurers, the conclusion would seem to be justified that the American public is now contributing annually in the neighborhood of $6,000,000,000 for insurance protection. Moreover, insurance companies in the United States now hold assets equal to about one dollar out of every twenty-five dollars of the nation's total wealth. A business of such magnitude naturally undergoes numerous changes in operating methods or types of service rendered, and is bound to face many problems of a far-reaching nature. The larger portion of the present volume is devoted to the discussion of such changes and problems.

Another notable tendency during the past decade has been the remarkable growth and transformation of some of the newer fields of insurance. Particular mention should be made of automobile insurance, "use and occupancy" or "business interruption" insurance, and the various forms of weather insurance. The first has grown from insignificant proportions ten years ago to a premium income of about $350,000,000, and is confronted today with widespread agitation for compulsory coverage through legislative enactment. Business interruption insurance—protection against loss of profits and unavoidable overhead and fixed charges through the temporary or total interruption of business through fire or some other hazard—is probably the most discussed subject in the field of property insurance at the present time. Its mission is so far-reaching economically that it is bound ultimately to become one of the most important types of coverages. In fact, its growth has been described "as knowing no limit other than the limit upon the income-producing ability of physical property." Crop insurance against the adverse forces of nature,—hail, frost, storm, drought, excess rain, plant disease etc.,—is also commanding serious investigation and experimentation in many quarters. It is of tremendous importance to the agricultural community, and has had the economic consideration of Congress in recent years. Five of the volume's articles, it should be stated, are devoted to a discussion of the newer types of coverage that are looming large in the public estimation.

To an ever-increasing extent insurance service is also being directed towards the prevention of loss in the first instance. Formerly, the function of insurance was regarded primarily as "risk bearing," whereas today the emphasis is more and more upon "risk prevention." The latter function is distinctly gaining in importance as compared with indemnity. Prevention of loss in the first instance with respect to human life and property values is real insurance—probably the most important insurance activity of all—and from both the business and social standpoints should always take a place alongside of indemnity. As time passes, a larger and larger proportion of the premium income of insurers along all lines should be devoted in the interest of loss prevention. Practically all types of property and casualty insurers—fire, marine, bonding, compensation, steam boiler, credit, title, etc.,—are recognizing the service of loss prevention and their natural obligation and fitness to handle the matter. More recently the same idea has also been assumed on a much larger scale by life insurance carriers, with a view to performing the same creative function in the conservation of the life value that property insurers perform with reference to property values. Not only is there a rapid extension of periodic medical examinations to policyholders, but the thought is being extended even to the surveying and rating of entire communities from a health standpoint. The service is beneficial to all parties concerned—the underwriting company, the insured, the beneficiary, and most of all society as a whole. Owing to the importance of the tendency, three articles are devoted to a discussion of the subject from the standpoints, respectively, of life, property and casualty insurance.

Lastly, attention should be called to the impressive way in which insurance has been recognized by American universities and colleges during the past decade as an integral part of their educational program. At the same time numerous company and agency courses of study have also been started with a view to educating the vast field force that serves as the principal connecting link between the insuring public and the home offices. At least seventy-one universities and colleges are now offering separate courses in insurance. About half of these first adopted such instruction in 1920 or thereafter, about three-fifths since 1918, and about three-fourths since 1915. Thirty-nine of the aforementioned institutions have extended their instruction so as to devote separate courses to one or more of the major divisions of insurance, thirty-eight offering a course in life insurance, thirty-five in property insurance, and nine in casualty insurance. As a further development, mention should be made of the fact that nine institutions of higher learning require an insurance course for all of their students in business, that one additional university proposes to adopt the same plan in the near future, that three more, although not requiring the course, nevertheless strongly recommend the same to all their students in business subjects, and that four require such instruction of all students specializing in financial subjects. Such progress is indicative of the increasingly high regard for insurance as an institution designed to promote individual and social welfare.

S. S. HUEBNER.

The Rôle of the Life Insurance Company in Health Conservation Programs

By Lee K. Frankel, Ph.D.
Second Vice-President, Metropolitan Life Insurance Company

THE goal of the life insurance company today is to bring to fruition the promise of the Psalmist,—"The years of our life are three score years and ten." The health activities of insurance companies may prove to be one of the causes which will bring to pass his further statement, "And if by reason of strength they are fourscore years!" From the viewpoint of society, no purpose could be more important than prolonging life; from the standpoint of insurance companies, none could be more economically sound. Because this problem of life conservation is so significant, it may prove interesting to record the progress which has been made in the last decade and to outline possible future developments. In a paper appearing in this publication in March, 1917,[1] I gave the reasons which made health conservation, community social work of the utmost value and good insurance practice. All that I said, then, holds equally true today.

Twenty years ago, except for the requirement of physical examination designed to select suitable risks, insurance companies paid little attention to the health of policyholders. Now many activities are undertaken undreamt of a decade ago. Periodic health examinations of apparently well persons is being popularized; the attention of the man on the street is being directed to the rules of hygienic living; public health work has made notable progress; sanitary regulations are well enforced—water and milk supplies on the whole are adequately safeguarded. Diseases about which we know the origin and methods of treatment are well under control. To secure these results insurance companies have heartily co-operated.

Preventive Measures

Realizing the preventability of disease and the savings which might accrue from health education, life insurance companies, both here and abroad, have embarked upon ambitious health conservation campaigns. It is difficult to conceive of a more promising program, especially if, as has been estimated, from one-third to one-half of the deaths occurring annually may be prevented or at least materially postponed.

One of the most useful disease preventive measures is periodic health examination. Many insurance companies are now offering it to policyholders. This constructive activity may add five years to the life expectation of the average person between the ages of forty-five and fifty. The Metropolitan Life Insurance Company was among the first to offer this service. In 1914, it authorized the Life Extension Institute to examine certain classes of policyholders in its Ordinary Department. Up to 1926, 223,500 examinations had been made.

Other insurance companies followed suit—forty-two insurance companies are now using the facilities of the Life

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[1] Lee K. Frankel:—"Conservation of Life By Life Insurance Companies," *The Annals* of the American Academy of Political and Social Science, Volume LXX, March, 1917.

Extension Institute. Among them are the Guardian Life, the Penn Mutual, the Western and Southern, etc.; likewise many smaller ones. Companies granting this privilege are found in all parts of the country—in Kansas, Illinois, California, North Dakota, Arkansas and in Canada. A number of companies, including the National Life and Accident of Nashville, the Alabama National, and the Southland Life of Dallas are using other facilities of the Life Extension Institute and are broadcasting and publishing material supplied by the Institute. The John Hancock Mutual Life Insurance Company, the Provident Mutual and the Equitable of New York give free examinations through their medical examiners. The Missouri State Life has announced that it will offer free health tests to policyholders, irrespective of the amount or plan of policy.

The Metropolitan Life Insurance Company has carefully analyzed its experience with the Life Extension Institute. The histories of 6000 individuals examined during the first years and their progress to July, 1924, were studied. There was a saving of eighteen per cent in the expected mortality. The greatest saving in mortality occurred at the ages between forty and sixty. Marked reduction in mortality was found among those suffering from fairly serious impairments. About 1400 individuals had disabilities so grave that they would have been rejected for most forms of insurance. Nevertheless, this group gave a ratio of actual to expected mortality of only eighty-two per cent of the American Men Table. Apparently these policyholders had profited by medical advice—in no other way could this favorable showing be explained.

Equally promising is the extension of nursing service to sick and disabled policyholders. The Metropolitan instituted nursing service for industrial policyholders in 1909. Recently the John Hancock Mutual Life Insurance Company organized a similar service. The West Coast Life Insurance Company, the Aetna, and the Travelers' offer nursing privileges to group policyholders.

Publication of health literature is another important activity of insurance companies. The kinds of health booklets issued are too varied to enumerate. The Metropolitan has published a fairly complete elementary health library of more than one hundred pamphlets. Very striking is the work of the Travelers' Insurance Company along safety engineering lines. It publishes a monthly bulletin devoted to safety—its theory and practice. The Prudential, the Connecticut General, the New York Life Insurance Company, the Guardian, the Northwestern Mutual, and the Equitable Life Assurance Society, issue health literature. The National Reserve Life of Topeka employs a professor of physical training to prepare bulletins on keeping fit.

GENERALIZING HEALTH PROPAGANDA

The health propaganda of insurance companies is utilizing the facilities of modern civilization—radio, magazine and newspaper publicity, nursing service, health exhibits, research bureaus, the refinement of statistical methods, the public school system, and motion picture films. The Metropolitan Life Insurance Company conducts a daily gym class over the radio. More than 200,000 letters were received in the first year and a half requesting exercise charts. The Southland Life Insurance Company of Dallas has been broadcasting daily exercises since 1925. The Company estimates that 30,000 people are doing "the daily dozen" under its direction. The Union Central Life Insurance Company of Cincinnati, Ohio, is broadcasting a health program Sunday evenings. The Travelers' Insurance Company of Hartford, Connecticut, has its own broadcasting station. Included in its general radio program are talks on health subjects, safety lectures and material suitable for school children.

Two companies have prepared motion picture films on diphtheria. The John Hancock Mutual Life Insurance Company's film depicts the dangers of diphtheria and the method of protection through toxin-antitoxin. The Metropolitan Life Insurance Company has a historical film, "New Ways for Old," which contrasts the treatment of diphtheria in 1860 with the modern preventive methods of today. The Metropolitan has two other films—one, "Working for Dear Life," which shows the benefits to be derived through periodic physical examinations; another, "One Scar or Many," deals with smallpox. Over seven and a half million people have seen these films. A film dealing with the dangers of overweight is in preparation. The Prudential Life Insurance Company has health slides which are suitable for distribution in schools. Some of the casualty companies have safety and fire prevention films. The Modern Woodmen of America, a fraternal organization, has made a two-reel film, "The Man Who Came Back," showing the tuberculosis prevention work and picturing the tuberculosis sanatorium maintained by the organization.

Fraternal insurance organizations have become interested in health service work. The National Fraternal Congress composed of sixty-seven fraternal associations with a membership of 11,000,000 has recently undertaken an active health educational program. It has a committee on health conservation to prepare health literature and health articles for fraternal magazines. Certain fraternal benefit societies conduct hospitals and sanatoria. The Woman's Benefit Association maintains forty health centers in various cities where members may receive free examination, advice and medical care. Traveling physicians make health examinations; there is a free nursing service for sick members, and summer camps for recreation. The National Fraternal Congress is considering giving periodic health examinations to its members.

HEALTH WORK OF FOREIGN COMPANIES

Foreign insurance companies are evincing interest in health educational work. The Wesleyan and General Assurance Company of Birmingham, England, has established a Health Service Bureau and is issuing pamphlets on health subjects. The Mutual Property Insurance Company, Ltd., after a study of American methods has established a nursing service and has issued health pamphlets. The General Assurance Society of England and other British companies are working along similar lines. Two Australian companies have established health conservation and nursing services. The insurance department of the Japanese post office has engaged in active health propaganda. The Nippon Life Assurance Company has established a Social Welfare Foundation to commemorate the wedding of the ruling monarchs. The company has organized activities to promote public health and hygiene and in particular, to combat tuberculosis. It provides care for children and nursing mothers. It distributes health literature, organizes lectures and health exhibits and other health activities. The company has established a free Consultation Bureau which makes examinations and gives treatments. This is one of the most far-reaching foreign health programs. It closely follows American methods.

HEALTH WORK OF THE METROPOLITAN

As an illustration of the health work of insurance companies, I shall briefly detail the activities of the Metropolitan Life Insurance Company. In 1909 in announcing the organization of a "Welfare Division," the company stated that "insurance, not merely as a business proposition, but as a social program, will be the future policy of the company." It was believed that sickness and death could be appreciably reduced by a continuous campaign of education in personal hygiene; that policyholders could be interested to participate actively in community health work and civic betterment; that insurance agents could be of value in spreading the message of health; that co-operation could be extended to health officials and welfare organizations to facilitate their work; that constructive health legislation and more adequate appropriations for health work could be secured.

A large number of policyholders were workingmen and their families. Their mortality was materially higher than that of the population. A special table of mortality known as "The Industrial Table" was used for this group. As late as 1911, the death rate was 12.5 per cent as compared with a rate of 10.1 per cent in the general population. The greater mortality contributed to the relatively higher cost of industrial insurance. The health campaign today reaches more than 23,000,000 people—one-fifth of the entire population of the United States and Canada.

The health literature issued by the company interprets scientific medicine in readily understandable terms. A series of more than 100 pamphlets deals with diseases, such as cancer, measles, whooping cough, diphtheria, etc.,—their symptoms and treatment. The need of trained medical advice is stressed. Other booklets deal with first aid, accidents, rules of hygiene, the care of the baby and the young child, the health of the worker, mental hygiene and so on. In 1926, for example, 44,247,526 pieces of literature were distributed, bringing the total to over 420 million. A quarterly health magazine has a circulation of more than 5 million copies.

A visiting nurse service was established in 1909. Nursing service is now available in over 4000 communities in the United States and Canada. Nearly 30 million visits have been paid—of these, 3,188,417 visits were made to 633,789 patients in 1926. In 1909, visiting nursing was intended largely for the poor. The Metropolitan has extended the scope of health nursing by making it available to self-supporting and economically independent persons. Public health nursing has been popularized. The middle classes, as well as the poverty-striken, call upon the public health nurse. Scholarships for additional professional training in public health problems have been granted to nurses. Nursing institutes under the direction of competent supervisors have been organized. The Company in co-operation with the University of Montreal, the Provincial and local health departments and the Anti-tuberculosis League, is conducting a training center for the education of French-speaking nurses.

In addition to literature and nursing, other efforts have been made to educate policyholders in personal hygiene. A Health and Happiness League was organized for juvenile policyholders. Sanitary drinking cups and patterns for making drinking cups have been distributed. Co-operation has been given in campaigns for clean-up weeks, street safety, recreation, and child welfare. A series of traveling health exhibits have been distributed. Nothing has been more significant than the continuous efforts which have been made to show policyholders insured in the Industrial Department their responsibilities as citizens. Special attention has been paid to foreign-born policyholders and those of foreign parentage. Literature has been translated into their mother tongue. Classes in English have been organized. Agents have encouraged them to apply for citizenship. Practical advice and service regarding immigration laws have been given to policyholders having relatives coming to the United States.

A field staff of almost 25,000 agents and managers has been taught to be messengers of health. A special correspondence course and periodical meetings have developed this viewpoint. Agents are instrumental in securing better health and living conditions in their communities. They have made close contacts with Health Departments and assisted Health Officers in obtaining increased appropriations. They have co-operated in special campaigns for typhoid inoculation, toxin-antitoxin immunization, etc., and have persuaded many parents thus to protect their children. With the slogan, "No More Diphtheria in 1930," a special drive to eradicate diphtheria in New York State is being conducted. Special literature has been distributed to policyholders during epidemics. Through the aid of agents, a model milk ordinance, advocated by the United States Public Health Service, has been secured in many communities.

Similar co-operation has been given the medical profession, to private health organizations, and to associations interested in health campaigns, such as safety councils, parent-teacher's associations, women's clubs, Boy Scouts and Girl Scouts. The company's literature has been given freely to these associations. The story of the Christmas Seal has been made the subject of magazine publicity. Special club papers, charts and campaign bills have been prepared for women's clubs seeking to arouse public consciousness to the importance of modern health work. A special bureau of the company has made close contacts with the public schools and has prepared special school literature. Special studies in school health have been undertaken, under the auspices of an Advisory Educational Group and in co-operation with New York University, the University of Michigan, Columbia University, and the Massachusetts Institute of Technology.

Through its policyholders, the company has encouraged legislation for the promotion of health. In 1909, Chicago policyholders were advised about the merits of a proposed municipal tuberculosis sanatorium. Successive efforts have been made to focus the attention of the policyholders on proposals for bond issues for the erection of sanatoria and hospitals; on proposed appropriations for state and municipal departments of health and for the establishment of county boards of health; on proposed legislation for playgrounds; on laws minimizing the dangers of street accidents and on proposed amendments to state constitutions affecting child labor. There has been frequent occasion to arouse interest in communities to secure pure milk ordinances and to permit the use of safe milk. The tenement house situation in various communities has been brought to the attention of policyholders. Improved systems of sewage disposal and water supply have come about in many communities through their efforts. Other activities in this direction have been attempts to secure a Federal Department of Health, an amendment to the state constitution in New York for a Workmen's Compensation Act, laws for full-time health officers, ordinances for pure milk and water, compulsory birth registration, vital statistics, provision of free toxin-antitoxin, and better methods of disease control

In the desire to find new avenues of disease prevention and to give practical application to discoveries in preventive medicine, the company has undertaken surveys and demonstrations. Unemployment surveys were made at the request of the United States Department of Labor. Sickness surveys have been conducted in various cities. A demonstration in tuberculosis control in Framingham, Massachusetts, was conducted in co-operation with the National Tuberculosis Association. A sanitary survey of New Orleans was made. A special committee of the American Public Health Association to study health practices in large cities was financed. A demonstration was undertaken in the Province of Quebec to reduce infant mortality. A commission appointed by the company has been studying influenza and pneumonia and the common cold. Another committee, appointed by the company, is making a study of burial costs.

LENGTHENING OF LIFE-SPAN

The result of this has been a lengthening in the life-span of Industrial policyholders in excess of the improvement which one might reasonably expect from the record of the general population. Thus, between 1911 and 1925 the expectation of life of Industrial policyholders increased 8.88 years, while the gain in life expectancy for the general population of the United States Registration Area was only 5.16 years. In 1925, the expectation of life among Metropolitan Industrial policyholders was 55.51 years, as compared with an expectation of 46.63 years, in the two years 1911–1912 combined.

The greater extension in the life-span for the Industrial policyholders over that discovered for the general population was due, of course, to the more rapid fall of the death rate among these insured wage-workers. Between 1911 and 1925, the Industrial policyholders' death rate declined 32.5 per cent and among the general population of the Registration Area only 15 per cent. This decline in mortality among policyholders resulted in a saving (over and above that expected from the general population) for the whole period 1911 to 1925, amounting to 240,744 persons.

DECLINE IN MORTALITY RATES

Another way of looking at the remarkable improvement of the insured Industrial population is to compare the difference in 1911 and in 1925 between the death rate for this group and for the general population. In 1911, the death rate of policyholders in the Industrial Department was 24.3 per cent in excess of that for the general population. In 1925, the policyholders' death rate was 8.46 per 1000, and this was actually lower than the crude death rate which occurred in the general population of the United States Registration States, 8.57 per 1000.

For 1926, we have the information only for the Industrial policyholders. The facts show that in that year there occurred 63,330 fewer deaths than if the mortality rate of 1911 had prevailed. It is, of course, at this time impossible to compare the 1926 death rate for policyholders with that for the Registration Area, but when the figures become available later on, it will be shown, in all probability, that the 1926 death rate of these insured persons was lower than it would have been if the experience of the general population alone had prevailed.

A few facts for important diseases may be of interest. Thus, between 1911 and 1925 there was a greater decline in tuberculosis mortality (56.3 per cent) than among the general population (45 per cent). For diphtheria, the death rate among our Industrial policyholders declined somewhat more rapidly than it did in the general population of the United States, the decline for the policyholders between 1911 and 1925 being 62.6 per cent, a more favorable figure than that recorded over the same period for the Registration Area (58.3 per cent). For measles, scarlet fever and whooping cough the death rate among the Industrial policyholders also declined more rapidly than it did in the general population of the United States Registration Area. The decline in the diseases relating to childbearing over this period was also more favorable than in the general population. Between 1911 and 1925 a reduction of 14.6 per cent in the death rate for puerperal diseases was recorded, whereas in the general population the decline was only 9.6 per cent.

WHAT IS NEEDED

Life insurance companies have contributed to the improved health of the American people. The economic value of their work has been demonstrated. And yet, while standards of personal hygiene have risen, community health work is incomplete. Existing knowledge of the causes and prevention of communicable diseases has not yet been fully applied. Communities with well-organized health departments are still too few; the trained and efficient health officer, appointed for merit and free from political pressure, is just beginning to obtain recognition. Cities or states with ample appropriations for activities essential to a modern health department are still the exception. There is need of adequate laws to safeguard water supplies, milk supplies, and foodstuffs. Campaigns of education by the health authorities to secure co-operation of an educated and enlightened citizenry must be more fully organized and developed.

Is not such a campaign for life prolongation worth while from both the social and economic aspect? What, then, should be the relation of the great institution of life insurance to this altruistic effort? As I pointed out in a previous paper,[2] it is not the function of any one particular company, but should be the joint obligation of all. Acting co-operatively, life insurance associations should organize a bureau of health conservation in command of ample funds and adequate personnel. Such a bureau should undertake active propaganda in the education of policyholders so that eventually an educated public may be assured. It should endeavor to secure legislation—Federal, state and municipal—from which competent health administration would result. Its energies would be directed wherever it were feasible to secure adequate appropriations for comprehensive and constructive preventive health work. The proposed bureau should use its influence and power to combat the attempts which are daily being made to undermine scientific medicine, amend existing laws, and let down the bars which now protect the public health.

If such a bureau could be organized, representing as it would the joint efforts of the life insurance companies, with the backing and the support of all groups in the community and possessing power to formulate and develop a comprehensive health program, we could assuredly look forward to a steady reduction, year by year, in the death rate and an indefinite prolongation of life. For, in spite of the splendid progress which has been made, we are still far from having attained the limit of the life span which our present knowledge of preventive medicine makes possible. At least ten years more could be added to the prevailing expectation of life for the average person in the United States. This is a most conservative estimate which does not take future medical progress into account. Researches are now going on in laboratories and clinics into the cause and prevention of cancer, pneumonia, infantile paralysis, the common cold, influenza, and other diseases whose etiology is as yet not fully understood, which may revolutionize present methods of treatment. When we have these in our grasp and they follow in the wake of yellow fever, smallpox and the other diseases which we have conquered, we may confidently look forward to a life expectancy of seventy, eighty, even 100 years—who can say?

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[2] Lee K. Frankel, "Life Insurance and Public Health." An address delivered at the International Convention of Life Underwriters, Atlantic City, N. J., September, 1926.

Co-operation Between Life Insurance and Trust Companies

By Edward A. Woods

President and Manager, The Edward A. Woods Company

ENDURING institutions arise only when the need for them occurs concurrently with facilities for supplying them. They are not invented but are rather evolutions. When savages roamed this continent, not only were stock exchanges, universities, trust companies or large emporiums not needed, but to supply them would then have been impossible even had the need existed. Leonardo da Vinci could not have made a successful flying machine when the gas engine, electric batteries and many other essentials of the modern aeroplane were unknown.

In Response to Modern Needs

The life insurance company and the trust company are both products of the times. There are certain requisite factors necessary to establish and maintain a modern life insurance company which did not exist in this country one or two centuries ago and do not exist to-day in most foreign countries. The mathematical and mortality data upon which such companies are founded, the intricate systems of communication which enable a company with headquarters in New York City to have millions of policyholders scattered in every village, town and hamlet in the United States and safe methods of remitting and investing vast sums of money did not exist before the days of banks, post offices, railroads and telegraph. Then, too, life insurance would have been impractical when comparatively few people had the means to provide it. In a country where daily existence is difficult, the thought of providing for one's family after death or making provision for one's own old age is but an idle dream. It is only in the last century that any appreciable proportion of the population of this country have had sufficient means to provide for other than their daily wants and in addition something for investment in banks, life insurance, bonds or other securities. Just a little over a century ago the Duke of Wellington opposed the establishment of savings banks in England on the ground that if the laboring man was earning more money than he needed to live on, his wages should be reduced!

Less than a century ago, when the average duration of human life was about forty years, the expense of life insurance would have been prohibitive. It is estimated that for every year of life saved now in this country, the cost of insurance is reduced some forty million dollars. Were the same amount of insurance in force now possible in 1850, the cost would have been $720,000,000 more than is paid for such protection to-day—an increase over the present cost of almost thirty-five per cent. It is unnecessary, however, to enumerate all the changing conditions necessary to make the establishment of a modern life insurance company possible.

The trust company is also a very recent response to a modern need. It, too, requires certain financial conditions and modern facilities to exist. It is the product of conditions and times when people have estates to leave, securities to lock in safe deposit boxes, when multitudinous laws of many political jurisdictions complicate the inheritance of property. The need for corporate executors such as the trust company became manifest when there were a sufficient number of estates and trusts to be administered which required experience and technique in order to settle estates economically. Our Puritan forefathers were little concerned with the problem of whether their widows or spoiled sons would dissipate large estates for the simple reasons that there were no large estates and few idle sons. Today in every American city there are parents deeply concerned with this question who are turning to the trust companies for an answer.

The English nobility, earlier faced with the problem of the dissipation of estates upon inheritance, developed the law of Entail under which the oldest son inherited the property and could not dissipate it. This rigid arrangement applied only to the oldest son and concerned the relatively few estates of the nobility. It was thus an aristocratic institution. The American trust company, on the other hand, is a democratic institution and provides for the administration of not only the large estate but the small one and permits the testator to leave property not only to the oldest son or next of kin, but to anyone whom he may choose as an heir.

LIFE INSURANCE VS. TRUST COMPANIES

It is obvious that there are essential differences between the chief functions of life insurance companies and trust companies and yet many places where the functions of one organization naturally supplement those of the other. The life insurance company is becoming ever-increasingly a national institution. Whether its office be in Los Angeles or Boston, its clientele extends throughout the entire country. Its policyholders may comprise millions of people scattered over every state and its funds may in turn be invested nation-wide.

On the other hand, the trust company is chiefly a local institution. The banking facilities, its function as registrar of bonds, as a rentor of safe deposit boxes, as a custodian of wills, as the acceptor of trusteeships and the function to act as administrator, executor or trustee of an estate are generally confined to the community in which the trust company is located. A trust company in Dallas, Texas, secures very little business from Jacksonville, Florida, or Richmond, Virginia; a life insurance company with headquarters in Boston or Philadelphia may do a larger business in some distant city than any local company there.

There are many functions of each institution in which the other is but little interested. No life insurance company is a bank of deposit and the charters of most companies provide that every contract shall involve some life contingency. With the exception of immediate annuities, it is not the function of the life insurance company to act as trustee of funds except for the distribution of those arising from the maturity of a life insurance policy, and even then the company is subject to certain limitations. A life insurance policy is a contract to pay; a trust is an agreement to hold or distribute funds often with wide discretion. Life companies do not act as transfer agents, rentors of safe deposit boxes, receive savings or perform other banking functions that are the regular duties of trust companies.

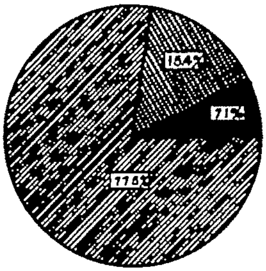
The trust company, on the other hand, does not create estates. It takes care of funds already provided. Through life insurance estates are created and the trust company acting as executor conserves them. Of course, both institutions are interested in stable conditions and the prosperity of the community. The business of both is materially aided by prosperity, thrift, sound financial conditions, wise legislation and a healthy, long-lived population.

Both these institutions are peculiarly American, though they have their foreign origins. Life insurance originated in England as an outgrowth of the underwriting in Lloyd's Tavern dating back to 1688. The original business of marine insurance has now developed into nearly one hundred and fifty forms of insurance, of which life is perhaps the most important because it deals with that most fundamental and greatest of all values, human life. However, neither the life insurance company nor the trust company have developed in any foreign country to the extent that they have here and in Canada. This is due partly to our wealth, but in the case of life insurance, is due chiefly to the development of the agency system and the renewal contract under which life insurance companies employ an agency force to actively solicit business, for which they are generally paid a percentage of the first premium and a much smaller percentage of those that are renewed. Thus a part of the underwriter's compensation is contingent upon the policy being maintained. This form of agency system is practically an American development and with the exception of some Canadian and American companies doing business abroad, does not prevail in other countries unless Australasia be an exception. Neither has the trust company as known in this country been so developed abroad.

The United States carries three times as much life insurance as the rest of the world put together and six times as much as any single nation. Ninety-two per cent of all the life insurance carried in the world is in English-speaking countries, so that it may be said in general to be an institution of English-speaking peoples.

CHART I

LIFE INSURANCE IN FORCE IN THE WORLD



▨	United States	$ 77,512,158,966*
▨	British Empire	15,454,665,781**
■	All other Countries	7,291,035,338'
	Total	$100,257,860,085

*Dec. 31, 1924
**Canada 1924; Other Governments, 1923.
'Latest available figures

Recently the mutual interests of life insurance and trust companies have been recognized by representatives of both institutions, which has resulted in remarkable progress in the development of co-operation between them. This has, in turn, greatly benefited the representatives of both institutions and the public they serve. Some of their chief mutual interests, aside from that of banking, are that people should be thrifty; that as many as possible should leave solvent estates to their heirs; that they should provide funds for their own old age; and that all funds left to heirs should be safeguarded and wisely invested to bring as high an increase as possible commensurate with safety. As more people leave estates of profitable size, the opportunity for trust companies to secure more business from handling them increases, and life insurance is the chief instrumentality for accomplishing this end.

ACTIVITIES OF INSURANCE COMPANIES

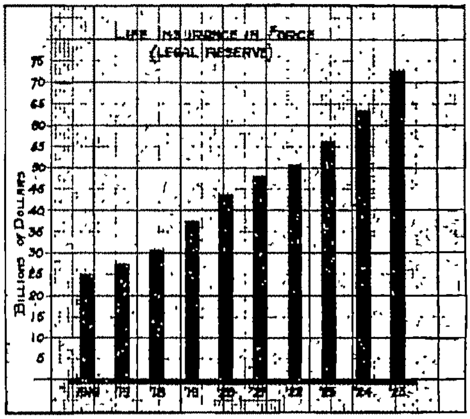
An agency force in excess of 200,000 underwriters of legal reserve companies secured 3,704,933 ordinary and 14,259,778 industrial policies in 1925, aggregating almost $15,000,000,000 of insurance, besides soliciting millions of prospects on whom they failed to place insurance but with all of whom they discussed the creation of estates. Their work along this line makes their co-operation with trust companies invaluable to the latter, for most trust companies do not employ an active soliciting force but rely instead chiefly upon advertising to bring them new business.

The insurance company provides ready money to create estates, or to keep those solvent that would otherwise be hard-pressed for cash to offset the debts, taxes and administration expenses which ensue upon the death of testators. It provides for the shrinkage of estates from these causes and often prevents the forced sale of securities. Life insurance proceeds also constitute the sole estate of the great majority of people who would otherwise leave no estate at all.

Most adults have income but comparatively few have large capital. Where there is one person who has a large principal invested in mortgages, bonds, stock or cash, there are many who have considerable incomes but who live closely up to them, depending chiefly upon life insurance for the creation of any estate they may leave. One of the interesting things recognized by trust officers recently is the part that life insurance plays not only in making estates more profitable to handle, but in creating estates that would otherwise not exist. Careful examination has shown that about two-thirds of those who die and leave estates create them through life insurance.

The rapidly increasing amount of life insurance in force not only represents the coverage of an increasing number of persons, but also reflects the growing wealth of the country and the increasing size of life insurance estates. It likewise reflects a greater public appreciation of life insurance as a creator of estates. While $500,000,000 in death claims is annually paid out today besides $153,000,000 in maturing endowments and annuities, there will be far more paid in the future as some of the $72,000,000,000 now in force matures. The estates thereby created should be adequately safeguarded and in most cases be handled by trust companies rather than by private executors.

CHART II



Life insurance companies have devised policies that partly meet this need, chief among which is the life income policy, which is unquestionably the safest kind of insurance for the family. It has the advantage of having the entire assets of a company back of every contract instead of securities, however carefully selected, that belong to the single trust. On the other hand, there are many instances where a trust company should be a trustee of funds for purposes not covered by a life income policy and certainly not so under policies payable in a single sum.

Life insurance is first necessary to provide cash as a clean-up fund from which to liquidate estates whose debts, funeral expenses, those of last sickness, taxes and administration expenses must be paid largely in cash. In the case of large estates, taxes are a very important item and are always a first charge upon the estate. These liabilities must be provided for before a life income, for even if the latter be provided for a wife or children, where the estate becomes insolvent, such debts are usually paid by the family as debts of honor. It is to the credit of most people and also to their surviving families that they want such debts paid. Even though the latter are exempted from liability for these debts by law, they often pay them before accepting the provision of life incomes.

Life income insurance is applicable chiefly to persons at least of some small means and is out of reach of most policyholders. The average insurance policy in the United States is for less than $2500, excluding industrial insurance policies. The vast number of the latter average but $174 and are really burial policies inadequate to pay the expense of the last illness and burial. There are millions of people who buy or should buy life insurance whose incomes permit them only to provide a fund from which to pay the expenses of death and to carry the family for a year or so thereafter. These small estates need the most careful management and in many cases should be administered by trust companies. Take, for example, the small merchant in the country town whose total estate, after debts are paid, is $4000 or $5000. Every penny of this money should be conserved. Every unnecessary expense should be avoided, every asset liquidated at its highest possible value and the residue so wisely spent that it will be spread over as many years as possible. In such a case the trust company can best serve the purpose in distributing the fund supplied by life insurance.

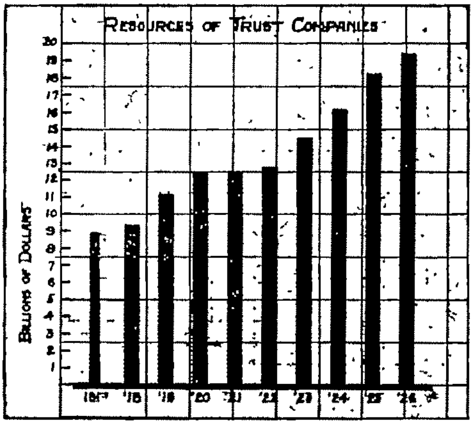
There is another class of estates where flexibility in disbursing funds is necessary which is impossible for the life insurance company to give. For instance, it cannot pay a part of the proceeds of a policy for certain emergencies, as for illness, nor spend money for the education of children upon the condition that they avail themselves of this advantage. It cannot protect the widow or daughter against unforeseen events which require the exercise of judgment. However, a trust company can do all these things with money provided through life insurance.

The life insurance company is a national institution, the trust company a local one. Intimate problems are often involved in making a will, whose execution may require discretion in perhaps liquidating the business of the deceased and distributing its assets, or more intimately may concern the ever-changing family relations of the heirs, as the re-marriage of a widow, the marriage of children, the distribution of money dependent upon the thrift shown by heirs, and a host of other considerations, all questions that one wishes to discuss personally with local officers of a local trust company. They are factors which require changing provision from time to time. The conscientious, intelligent life underwriter will meet with a large number of cases where the life insurance on the insured will not solve the problem of family maintenance without the services of a trust company to carry out the purposes for which the insurance was intended.

FUNCTION OF TRUST COMPANY

Trust companies have grown remarkably both in size and in number the last decade until now there are 2684 companies with resources over $19,000,000,000, excluding national and state banks with trust powers. With the trust departments of state and national banks they exercise a powerful influence upon the financial actions of a great many people. They can materially aid the cause of life insurance by explaining what it is, what it will do, and how it will do it and by intelligently studying the functions and services of life insurance companies, trust officers can do much to see that their clients enlarge their insurance programs.

CHART III



The officers of trust companies can serve their own companies, their clients and the general public best by becoming thoroughly familiar with the functions of a life insurance company. They should recognize the necessity of adequate life insurance to protect the shrinkage of estates, especially those where trust companies act as executors or trustees. When trust officers discuss inheritance tax problems with clients, they might well suggest that adequate life insurance be made available to the executor for the purpose of paying such taxes. When a client expresses a desire to mortgage a home, life insurance can be recommended to amortize the mortgage. In many instances life insurance can be used to create estates for those who would otherwise leave none at death; in others charitable bequests can be provided through life insurance and this method particularly recommends itself because it obviates administration costs and taxes up to a liberal amount.

It is estimated that only about five per cent of the life value of the population is covered by life insurance, while over fifty per cent of the combustible value of the property in the United States is insured against loss by fire. It is obvious, therefore, that most people, whether of small or large means, have neither covered their life value nor protected their estates by sufficient life insurance. The trust officer by his advice can help decedents leave estates in better condition in many instances by suggesting that the various liabilities incident to estate settlement be provided for by money purchased in advance, in other words, through life insurance.

Trust companies are often called upon to advise clients about their business problems. In a large business where the key man is exceedingly valuable to the organization, the use of business or credit life insurance to cover his life value can often be profitably suggested by the trust official. It is desirable that cash be brought into the estate by means of life insurance at the death of its creator when the heaviest loss falls upon the estate. The amount of insurance so paid, whether considered locally or nationally, is pitifully inadequate. It is to the interest of the trust company and its clients to suggest that this provision be made in order that the estate debts can be liquidated and the estate kept at par. The difficulties of administration are thus lessened by liquidation and estates are settled on a more satisfactory basis than would otherwise be possible.

Investigations have shown that little cash is available at death even among the estates of the wealthy. A man of great wealth does not keep a bank account large in proportion to his means. Of the three items of shrinkage, *i.e.* debts, administration expenses (including those of the last sickness and death) and taxes, the amount of cash on hand in large estates does not equal any one of the three items of shrinkage and is seldom ten per cent of the total amount necessary to meet these liabilities. In effect, a man's death is like putting his business in a permanent receivership with additional tax expenses to follow, many of which must be liquidated at once. The ideal should be for every American to die with enough life insurance to cover his estate liabilities and leave his estate at death equal to what it was during his lifetime. This is best achieved through adequate life insurance protection.

With Co-operation

There are, of course, difficulties involved in the co-operation of life insurance and trust companies. It is easy for one institution to trespass upon the functions of the other, for an uninformed underwriter to advise on affairs that come within the range of the experienced trust officer; and it is just as easy for the latter to make the mistake of giving advice that is more properly the province of a conscientious and experienced life underwriter.

There are, of course, border-line cases where there may be a question as to whether money could best be provided to heirs through life income insurance policies or through funds left in the hands of a trust company. There may be other cases where the executor or trustee of an estate should be some one other than a trust company. Friction is easy along these border-line cases and other mistakes are quite possible, but these should not be allowed to retard the valuable work of co-operation of these two institutions in creating and conserving American estates.

No life insurance company should give undue preference to any trust company nor should any of the latter give preference to any single life insurance company. If, however, a particular trust company or life underwriter is found to be experienced and very attentive to the needs of his clients, they should be recommended on their merits aside from their company affiliations. These problems, like all others, are within the range of men of wide discretion to solve themselves.

The 200,000 trained life underwriters in this country who work in harmony with the officers of 5000 trust companies and banks with trust powers are making a tremendous contribution to thrift, the creation and conservation of estates, to the preservation of American homes and to the general safe, stable and conservative investment of funds as opposed to speculation, extravagance and waste. If the representatives of both institutions carefully study the social problems that beset their clients and then heartily co-operate to solve these problems, it cannot but result in the further growth and extension of both life insurance and trust companies, and, most important of all, benefit the ever-growing public they both serve.

Insurance of Substandard Lives

By ROBERT HENDERSON, F.I.A., F.A.S.

Second Vice-President and Actuary, The Equitable Life Assurance Society of the United States

THE conditions which render a given life ineligible for insurance at standard rates may be of various kinds, arising either from some special set of external circumstances surrounding the applicant or from some defect in his physical or mental condition. The two outstanding examples of the former are occupation and residence. It has always been recognized that certain occupations expose those engaged in them to an increased hazard of death from accident and that other occupations involve conditions such as dust and excessive heat which cause physical deterioration and increased liability to certain diseases. Similarly, the increased risk due to residence in tropical climates has always been recognized in view of the known prevalence, formerly more marked than at present, in those climates of certain fatal diseases from which residents of more temperate regions were practically exempt. The early tendency in life insurance was in fact to regard residence in any foreign country as extra hazardous. Risks involving these hazards of travel, residence and occupation presented themselves so frequently that their insurance at an extra premium judged to be adequate became a common feature of the business, and the term "substandard lives" is not ordinarily understood as applying to lives involving only those features of extra hazard. Companies insuring residents of tropical countries or persons engaged in hazardous occupations do not consider that in so doing they are engaging in the business of insuring substandard lives. This term therefore refers specifically to those lives subject to an extra hazard on account of some physical or mental defect, either disclosed by the medical examination or presumed to exist on account of some event in the personal or family history of the applicant.

PROTECTION FOR SUBSTANDARD LIVES

The insurance of certain of such lives at an extra premium dates back to the very inception of scientific life insurance. We are told that the Equitable Society of London, when it inaugurated in 1762 the writing of life insurance on a scale of premiums graded according to age, insured also those who had suffered from gout at a premium twelve per cent higher than the standard rate, those who had hernia at an eleven per cent increase and those who had not had smallpox at a twelve and a half per cent increase. The first serious attempt to develop this type of insurance, however, was made early in 1824 when the Clerical, Medical and General Life Assurance office was established, which undertook, as its leading feature, to grant policies on lives deviating so much from the common standard of health as to render them wholly inadmissible at any office then existing. In the absence of trustworthy data safety was sought in the provision that of the seventeen members of the board of directors at least eight should be members of the medical profession. In the selection of these directors an endeavor was made to secure men specially qualified to advise regarding some particular class of diseases. By this arrangement it was hoped that, whatever might be the complaint with which any applicant had been afflicted, there would always be on the board a medical director who was specially qualified by previous study and practice to estimate the increased risk. Another society, the Asylum, was started in the same year which also proposed to insure persons who "though far from being in a dangerous state, are not considered as select lives, and are therefore rejected as altogether uninsurable." Its promoters announced that they had "ascertained, by great care and research, the true law of mortality for various climates and diseases." No record has, however, been found of the basis of this claim.

Neither of these companies confined its business to this class of risk and on the other hand some other companies, either already in existence or later formed, took part in this business with the result that it was thereafter a more general feature of the life insurance business in Great Britain.

In the early days the practice was for the medical examiner to state his opinion of the degree of hazard in the form of a number of years to be added to the age, and while this was probably in its origin only a convenient way of stating the amount of extra premium to be charged, there was a resulting tendency to treat the case in other respects as if the risk were exactly the same as in the case of a healthy life at the advanced age. Some companies, however, had a single scale of increased premiums which applied to all substandard lives accepted by them.

METHODS EMPLOYED

Early in the history of this type of business the companies engaged in it discovered the disinclination of many applicants, considered uninsurable at standard rates, to admit even to themselves that they were in fact subject to an extra hazard. This frequently resulted in a refusal to accept the policy offered. The companies accordingly attempted to devise a method of providing for the extra hazard which would enable their agents to meet this objection. The plan adopted for this purpose was to reduce the amount insured during the early years so that only the standard premium need be charged but that, nevertheless, if the insured survived a specified period the full amount would be paid. One form which this arrangement took was a uniform reduced amount during the period of the normal expectation of life for the age of the applicant. Another provided for a smaller initial amount of insurance with uniform annual increases during the expectation period. A third form substituted for the expectation a period, usually less than the expectation, which was a multiple of five years. This method was proposed by Mr. W. M. Makeham in 1872, who suggested probationary terms of twenty-five years for ages under forty, twenty years for ages between thirty and fifty, and fifteen years for ages between forty and sixty with the qualification that the period should be so fixed that the initial amount would not be more than half of the maximum. This latter limitation was, however, only imposed in order that an approximate rule which he gave for determining the initial amount in the case of ordinary life policies from the number of years rating up, might be safely used. A fourth variation, under which the annual increase was equal to the gross annual premium paid and the initial amount was varied according to the degree of extra hazard provided for, was the one adopted by the first American life insurance company to engage in this business in an extensive way.

The psychological basis of these plans is quite evident as they enabled the agent to take the position, where the applicant disputed the fact of impairment, that the company was willing to back its opinion of the risk by making its extra compensation depend on the early death of the insured and agreeing that if the insured sustained his contention by, in fact, surviving to the end of the probationary period the sum insured would be exactly the same, for the same premium, as in the case of a healthy life. While, however, this argument was undoubtedly effective in many cases, it must be admitted that it is not so strong under close scrutiny as appears at first glance. The insured is in fact paying an extra premium for the benefit provided in the policy because the annual premium required from a standard life for that same benefit would have been less than he actually pays. The point involved may perhaps be better illustrated by supposing a parallel case in the field of gambling. Two men, A and B, may be discussing a proposed bet on the outcome of a football match between two teams in which they are respectively interested. They are each ready to bet on their teams but A thinks that the conditions entitle him to receive odds of say 5 to 4, whereas B holds out for even terms. The parallel solution of the difficulty would be for A to propose that they each put up five dollars as B desires, but with the understanding that if A should win the bet would be settled on that basis by handing over to him the entire stakes, whereas if B should win, thus confirming A's contention, only nine dollars should be handed over to B and the other dollar returned to A. This might sound plausible, but on consideration we see that A would not be really staking any more than four dollars as the other dollar returns to him in any event. Similarly, under a lien policy the company is not really insuring for the face amount as that amount is not paid unless a considerable sum has already been paid to it in premiums.

That the psychological appeal to the applicant was not as great as had been supposed was shown when one of the large American life companies, after having commenced the insurance of substandard lives on the lien plan, instituted the practice of offering to most of the applicants the option of taking a rated up policy giving full benefit from the start. The result was that practically every applicant to whom the option was given selected the rated up policy. The additional annual premium called for was very small compared with the additional insurance immediately obtainable. For example, according to Mr. Makeham's approximate rule a fifty per cent initial reduction running off over a twenty-year period is the equivalent of five years added to the age. At age thirty-five a rating up of five years means an addition of about seventeen and a half per cent to the premium for which the initial amount of insurance is doubled as compared with the lien policy. Accordingly, if, as is frequently the case, the purpose which is uppermost in the mind of the applicant is to secure immediate insurance protection, the lien policy is not likely to appeal to him.

The standard policy laws which were passed in 1906 in New York and a number of other states made it difficult and even temporarily impossible to issue policies on the lien plan with the result that since that time policies have, as a rule, carried full benefit from the start. The extra hazard is provided for by charging an extra premium.

This extra premium may be expressed in various ways. In some companies a number of scales of extra premiums for the various ages and policy plans are calculated so as to cover different percentage additions to the rates of mortality and each case when accepted is assigned to the scale considered most appropriate. In other companies the extra is expressed as a number of years added to the age. While, however, this method is in form the same as the method first used a hundred years ago, its actual working is quite different. Whereas then the medical examiner assigned the number of years added without any definite idea of the rates of mortality he was thereby providing for, it is now customary to determine first the degree of extra hazard to be provided for and to pass from that to the number of years addition required on the particular form and at the particular age in question. A third method used by some companies is to combine a flat extra premium with the rating up in age, adding, say, fifty cents for each year of rating up to the premium at the rated up age. Certain types of impairment are also covered by charging a relatively high extra premium which is, however, only to be collected for a limited period after which the regular premium will apply. This method is used where the hazard is of such a nature that it is considered that if the applicant survives a few years the risk will have become normal. These cases usually involve a history of a comparatively recent severe illness or operation.

BASIS OF INSURABILITY

The important problem, however, in connection with the insurance of substandard lives is one which relates to its position in the intermediate zone between standard insurance and rejection. This is the problem of determining the influence on mortality of the various facts ascertainable regarding an applicant for insurance. This is necessary in order to decide, in the first place, whether or not the applicant comes within the limits prescribed by the company for insurance at standard lives. It must not be supposed that the class of lives insured at standard rates, even if confined to those insured by a single company, is an absolutely homogeneous class. There are differences of occupation, residence, habits of life, family history, build and present or past physical condition included in that class which undoubtedly each have some effect on the prospects of longevity, but no distinction is made in premium rates if the net unfavorable effect is so small that the company believes it may be ignored without increasing the average mortality of its standard class above the point which it is desired to maintain. Any company could, undoubtedly, improve the mortality of its standard class by excluding a larger number of border-line cases. They are restrained, however, by two motives. The first is that of extending the benefits of insurance to as large a number of people as can safely be included. This applies to all companies but especially to those who do not insure substandard lives. The second is that it is very discouraging to the agency forces to have a large percentage of the applicants, secured by them in good faith and in the belief that they were good risks, refused standard insurance. This is particularly the case where those applicants are able to secure standard insurance in some other company.

Having decided that an applicant is not eligible for standard insurance, the company, if engaged in the insurance of substandard lives, must then decide on what terms, if any, it is willing to offer insurance. In order to make this decision it is desirable to have as much data as possible bearing on the mortality to be expected in a large class of lives similar to the applicant. In the early days the only basis for such decisions was the judgment of the medical director, founded on his knowledge of the nature of the impairments and his experience in the treatment of similar cases met with in his private practice. It was for this reason that the Clerical, Medical and General at the start tried to have a number of medical specialists on its board. A body of actual experience as to the mortality among insured lives, which when examined showed certain impairments, has been gradually accumulating to supplement and guide the medical director's judgment, but it seems probable that life insurance and particularly insurance of substandard lives will always make use of and rely upon that judgment. Mortality experiences cannot yield results of value in connection with the insurance of substandard lives unless based upon a classification of the risks according to the facts disclosed by the information secured when the risk was assumed. Each class must also be of considerable extent in order that the result may not be affected by considerable accidental fluctuation. In the formation of classes the desirable elements of homogeneity and size will always be in conflict and the advice of the medical director will always be of value in this connection. Then again, when the time comes to apply the results of experience to the selection of new risks, the skill of the medical examiner and director is necessary to determine to which class the given applicant should be considered to belong and in what direction and degree it varies from a typical example of that class.

IN CONCLUSION

From the foregoing it will be seen that, in addition to variations of general actuarial methods and policy forms, the rating of particular types of risk has changed during the history of the business for two reasons: first, the growth of medical knowledge and skill, and second, ascertained results of insurance experience. There is no doubt that the growth of medical knowledge has rendered possible the ascertainment of facts regarding applicants for insurance which were necessarily unknown to the insurance companies and even to the applicants themselves in the early days of life insurance. The gradual improvement in the means of determining the condition of the heart, arteries and kidneys and even the chemical composition of the blood stream itself has had an important bearing on rating of substandard lives. Actual experience is following along and checking up the meaning in terms of mortality of those conditions where they are sufficiently frequent to furnish the necessary data. It is checking up also on the effect of such conditions as overweight and underweight, family history, personal history, occupation and habits.

The collection of a useful volume of such data will be greatly facilitated by the use of the codes recently prepared by a joint committee of the Association of Life Insurance Medical Directors and the Actuarial Society of America, one of which covers medical impairments and the other occupations. The use of a common code will enable the experiences of all companies to be more readily combined together and thus give a satisfactory volume of data more quickly than would the separate experience of a single company, however large. The spirit of hearty co-operation displayed by the companies engaged in this business augurs well for its future increase in usefulness to the community through an orderly safe expansion.

Investment Tendencies of Life Insurance Companies

By Frederick H. Ecker, LL.D.

Vice-President, Metropolitan Life Insurance Company

THE investment holdings of life insurance companies indicate the vast proportions to which the business has grown and, in character, reflect the value of the economic service which their disposition has rendered in contributing to the growth and development of the nation. In recent years there has been a marked increase in the variety and liberality of life insurance service made available to the public. The development of the business has been in the direction of increasing concessions and of liberalizing the provisions favorable to policyholders and, in the matter of investment of funds, company executives have, without jeopardizing policyholders' interests, been ever mindful of public needs. Service has come to be an outstanding characteristic of the life insurance business, very definite in its application to individual and group policyholders and, in a multitude of ways, beneficial to the communities in which the business is transacted. The phenomenal growth of the business has been possible only because of the confidence which the American public has come to feel in the financial strength and soundness of the companies and in the wisdom and prudence exercised in their management.

Before undertaking to review investment facts as the best indication of the investment tendencies of life insurance companies, it is interesting to look for a moment at the size of our subject measured in dollar values. The assets of the United States life insurance companies, at the end of the year 1926, approximated $12,850,000,000. While these assets average only $115 for each outstanding policy and $215 for each policyholder, they exceed, in the aggregate, the assets of all savings banks and approximate half of the resources of all our national banks. These insurance assets are greater than one-half of the total value of all the railroad trackage and equipment of the nation. They are one-third greater than the value of the world's supply of monetary gold, and are now equivalent to more than one-thirtieth of the national wealth, which is calculated to be, as of the same date, $360,000,000,000. At the end of 1880 the national material wealth, according to the estimates of the United States Bureau of the Census, was $43,642,000,000. At that time the admitted assets of all of the United States legal reserve life insurance companies were estimated to have been $460,000,000. In the period intervening, while national wealth has multiplied slightly over eight times, the life insurance accumulations have increased more than twenty-seven times. Then the life insurance assets were 1.1 per cent of the national wealth—now 3.6 per cent thereof.

Perhaps it should be noted that it is in the nature of the life insurance business to receive, to hold and to invest funds and the interest accretions thereon over long periods of years, and the older the business the larger the accumulations. But, nevertheless, it is a startling growth. A great reservoir of capital has been erected. In the sense that the word reservoir suggests liquid capital, it is an inept term to use, and it would be more accurate to speak of a reservoir of investments in safe income producing securities. Capital transformed from a liquid state into fixed assets thus creates in policyholders a vested interest in the underlying securities of the railroads and other industries, in farms and in housing for residence and business purposes and in obligations issued for the financing of governmental activities. Augmentation of this fund from interest returns and from additions to reserve becomes annually a tremendous sum for fresh investment. These assets have increased four and one-third times in the twenty-year period last past, and the yearly increase for the last two years, 1925 and 1926, has been in excess of $1,000,000,000.

INSURANCE HOLDINGS

An analysis of the holdings and the policy pursued in recent years by the companies in investing this ever-increasing volume of capital with some reference to the conditions which, from time to time, have had their influence, will best show the investment tendencies of the life insurance companies. The figures used for this purpose are those contained in tables compiled by the Association of Life Insurance Presidents from data supplied by fifty-two legal reserve life insurance companies holding, in different years, from 92.4 per cent to 98.3 per cent of the admitted assets of all United States legal reserve companies.

Mortgage Loans

Taking up the classifications in the order of their importance, it is found that mortgage loans have now come into the first place and should be given first attention. Mortgage securities are of two classes, loans on farms and on city properties. Farm mortgages during the past twenty years increased from $268,000,000 to $1,960,000,000, or from 9.3 per cent in 1906 to 16.5 per cent in 1926 of the entire admitted assets of these companies. From the year 1906 to the year 1926 agricultural wealth was on a generally ascending scale, being rapidly accelerated by the influences of the World War. With the depression which began in 1920, there was a marked decline in agricultural values. In 1921 the total farm indebtedness of the country was approximately $13,000,000,000, and this had declined in 1926 to $12,250,000,000. Nevertheless, while the farm indebtedness was thus reduced $750,000,000, farm mortgage loans from life insurance companies increased $638,000,000, and the amount so invested, $1,960,000,000, thus furnished nearly one-sixth of the sum necessary to carry the farm indebtedness of the United States.

Mortgage loans on city properties furnish a striking illustration of the way in which life insurance funds keep pace with the necessities of the investing public so as to respond, so far as possible, to the greatest need. In 1906 mortgage loans on city properties amounted to $552,000,000, or 19.2 per cent of the admitted assets, whereas in 1926 such loans amounted to $3,123,000,000, or 26.3 per cent of the admitted assets. The tremendous increase in building from 1921 to 1926 is reflected in the increase in city loans from $1,252,000,000 to $3,123,000,000. The total mortgage investments of the companies at the end of 1926 were approximately $5,083,000,000, or 42.8 per cent of the total admitted assets.

Bonds

In the field of bond investments, one naturally thinks first of the loans for governmental purposes. Prior to the issue of United States Government securities in connection with the World War, the life insurance companies held bonds of the government to the extent of less than one-tenth of one per cent of their total assets. In 1919 the ratio was 11.5 per cent, illustrating again the response of the life insurance business to the most important demands from time to time. As new financing on the part of the government diminished, life insurance funds flowed into other channels, and in 1926 the companies held such securities to the extent of about 4 per cent of their total assets.

Investment in state, county and municipal bonds increased during the twenty-year period from $104,000,000 to $344,000,000. This form of security, however, is more readily absorbed by other classes of the investing public by reason of tax exemptions and so, as is to be expected, the proportion of total admitted assets of life insurance companies investing in such securities has decreased from 3.6 per cent to 2.9 per cent.

Our growing commercial relations with Canada and the development of the business of United States life insurance companies in Canada, are illustrated by their increasing investments in Canadian Government securities. Twenty years ago the amount so invested was $22,000,000, being eight-tenths of one per cent of the total admitted assets of such companies, whereas today these companies hold $261,000,000 of Canadian Government securities, which is 2.2 per cent of their admitted assets. With respect to investment in other foreign government securities, quite a different picture is shown. At the close of 1906, United States companies had $65,000,000, or 2.3 per cent of their assets in such securities. These holdings increased by the close of 1916 to $139,000,000, which was 2.6 per cent of the assets. Since then, there has been a drop to $24,000,000, or one-fifth of one per cent of the assets. This change has been brought about by the recent withdrawal of the United States companies from foreign fields.

The total investments in government securities of all classes, United States, state, county, municipal, Canadian and other foreign governments, amounted to $193,896,000, or 6.8 per cent of the assets in 1906, grew to $1,416,861,000, or 18.9 per cent in the year 1921, and had dropped, principally by reason of the reduction in the holdings in United States Government bonds, to $1,116,000,000, or 9.4 per cent, in the year 1926.

RAILROAD SECURITIES

The aggregate of railroad securities now held by these companies is $2,435,000,000. At the close of 1906, the amount of such securities was $1,002,000,000. Notwithstanding this substantial increase of $1,433,000,000 in amount, or 143 per cent, the percentage of total assets invested in this class of securities has dropped from 34.8 per cent in 1906 to 20.5 per cent, the ratio in 1926.

EXPANSION IN PUBLIC UTILITIES

An outstanding feature of life insurance investment during recent years has been the rapid expansion of investment in public utilities. In 1906, the companies had so invested $134,000,000 and now have $819,000,000. This is an increase from 4.7 per cent to 6.9 per cent of total admitted assets. In 1906, the major portion of public utility investments was in street railways, whereas today by far the larger portion is invested in connection with companies supplying light, power, heat, telephone and other similar service for home and business uses. The insurance companies' investments in this class of securities are almost entirely confined to obligations secured by mortgage on the properties of the operating companies. As an illustration of this investment tendency for the benefit of individual citizens, it is reported that 17,000 new customers were added to rural electric lines in Pennsylvania during 1925, and that, throughout the United States, more than 1000 farms per month are being added to the service lines of different electric light and power companies. It is also stated that the number of homes in the United States now served by electricity is about 15,000,000, having increased in the last six years from 6,000,000.

The investments in other bonds of miscellaneous character and in stocks amounted, in 1906, to $107,777,000, or 3.7 per cent of admitted assets, and had increased, by 1926, to $166,000,000 which represented only 1.4 per cent of the admitted assets. It should be noted that, since 1906, there has been a prohibition, by law, against the investment by life insurance companies in stocks, which prohibition has applied to a very large proportion of the company assets under consideration. The total investments in bonds and stocks increased from $1,437,457,000 in 1906 to $4,586,000,000 in 1926, but the percentage of such investments to the total assets had dropped from 50 per cent in 1906 to 38.2 per cent in 1926.

REAL ESTATE

Real estate holdings of the companies are practically confined to their home office buildings. The laws of most of the states limit such holdings to properties acquired through foreclosure and to such as shall be requisite for the convenient accommodation of the respective companies in the transaction of their business. The amount of assets invested in real estate increased from $156,000,000 in 1906 to $214,000,000 in 1926. It is significant, however, that the ratio of real estate assets to total assets decreased during that period from 5.4 per cent to 1.8 per cent.

The geographical distribution of the investments and their relation to the reserve on policies in the various states is an interesting phase of the investment tendencies of the companies. At the close of 1925 the companies had invested in the various sections of the country, with the exception of the Middle Atlantic and New England states, from 102 per cent to 244 per cent of their reserves in their respective localities. The ratio for the Middle Atlantic states—New York, New Jersey and Pennsylvania—was eighty per cent, and, for the New England states, forty-six per cent. There is advantage to the policyholders of the Middle Atlantic and the New England states in this situation, in that there is thus furnished in other localities a more fruitful field for the investment of their contributions to the asset fund of the life insurance companies, while advantage accrues to the other divisions of the country through the aid furnished by these funds to the more rapid development of their communities.

Reference has been made to the inherent nature of this business whereby money is paid in to be held, with interest additions, over long periods of years, but in considering the investment of such funds, it must likewise be observed that the nature of the business is such that these monies when paid in must be promptly invested. This action is essential to provide immediately the interest earnings which play an important part in the calculations which must be taken into account in computing the charge to be made for carrying the insurance risk. In consequence, management is not altogether or at all times a free agent in controlling investment practice, but must often yield to the necessities of the hour. Monies cannot be held in hand indefinitely, awaiting an ultimately desirable investment, but must be put to work promptly, and selection in the matter of investment ofttimes becomes a question of choosing investments which are immediately available. However, in studying the course of life insurance investments, made over a period of years, one cannot fail to note the evidence of recognition on the part of the companies of their responsibility for public service. There is plainly some guiding purpose which transcends the law of supply and demand and unquestionably directs investment policy to a very considerable degree and which would appear to be a concrete recognition of what has been termed the greatest economic need.

TREND IN INVESTMENTS

This review of the investment facts shows quite clearly that life insurance investments flow in channels which supply the economic needs of the nation. Going back to 1906 and earlier, during the period of railroad expansion, rails were largely in favor. Adverting again to that year, it appears that more than one-third of the admitted assets of the companies was invested in railroad securities. Reviewing the situation since that year, it is noted that as railroad building declined, the proportion of company investment therein has steadily decreased. Railroads have constructed practically no new mileage since 1914 but have been intensively developing existing facilities. Vast improvements have been made in efficiency and economies of operation. The life insurance companies have supported the railroads in carrying out their program of meeting the country's need for greater transportation facilities, through their purchase of obligations of the railroads issued to acquire new equipment. If it were not for such issues, the proportion of railroad investments by the insurance companies, which at the end of 1926 was about one-fifth of their entire admitted assets, would be considerably less. While the ratio of investments in railroad securities has been decreasing year by year, the investments in the securities of public utilities have been increasing, in keeping with the growth in importance of these enterprises. To an increasing degree, the obligations of that class of companies have come to be considered as seasoned securities acceptable for life insurance investment.

Mortgages on land and improvements thereon have always been a favorite form of long-range investment for trust funds and there is no other class of investment that has provided so satisfactory an experience for this purpose. This form of investment will continue to be the backbone of trustee holdings so long as property rights continue to be respected and continue to be the foundation upon which our social and economic life rests. The experience of the life insurance companies with this class of investment has been, in safety and in interest yield, more favorable than in any other class. In the mortgage transactions of the companies since 1906, one may readily detect the periods of depression and of activity in the realty markets from normal and sub-normal conditions to the great impetus which grew out of postwar conditions. Mortgage investments are a fair illustration of the extent to which life insurance funds are sought to be invested so as to be of the greatest benefit to the whole public. Loans for agriculture are not only of great benefit to the individual borrower, but are of immeasurable benefit to the country as a whole. Loans for housing, both for residence and business purposes, are not only a necessity but also furnish the means by which labor may be employed and, indirectly, the means by which a market may be furnished for the products of the agricultural communities.

In the matter of security for loans and in fixing acceptable standards for investment securities, there is a growing uniformity of practice among the companies. Just as the life insurance business, based upon actuarial science, has been developed in practice through underwriting experience, it may be said that in the matter of investment of funds, which, while not a science, is a highly specialized business, the practice of the companies is seeking higher standards as their experience broadens. The laws of the several states regulate the securities in which companies of those states may invest, but it is quite significant that the actual investment policy of individual companies is more rigid than the requirements of the laws which govern them.

Concretely, investment tendencies are now in the direction of mortgages on real estate. Farm loans, in the last year or two, have decreased on account of agricultural conditions, but they may be expected to become more desirable as conditions improve. The increase in mortgages on other real estate more than makes up for the tendency for the last year or two to decrease investments in farm loans. Tendencies are altogether away from investment in government bonds because such securities are more readily absorbed by other classes of the investing public to whom the tax exemption feature is more advantageous, while the life insurance companies can better invest in other securities affording more favorable interest returns than are to be had in the class of security which is tax exempt. The tendency is away from railroads, although, again from the standpoint of service, it should be noted that while a superficial consideration leads many to believe that life insurance investments in railroad securities do not afford such benefit for the public as do investments in farm and city mortgages, this view altogether overlooks the general economic and social welfare of the people as a whole. Ample and efficient transportation facilities are, as has many times been demonstrated, a vital necessity in the interrelations of people under our modern civilization. Great cities depend upon transportation for their daily food supplies. If the transportation machine is thrown out of gear, tragic results may well be anticipated. The tendency to invest in public utilities is in keeping with the development of that business both in volume and in its relation to public welfare.

The importance of allowing the funds of life insurance companies to follow the natural laws of supply and demand consistently with absolute safety and the serious results which flow from attempts to control these natural laws by artificial means cannot be over emphasized. Company management, as shown by the detailed reports covering a period of years, may be relied upon to recognize and support economic needs, and there is evident a clear appreciation on the part of company executives of the responsibility to render public service through the appropriate investment of life insurance funds.

Group Life Insurance

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LIFE insurance in essence is the business of paying claims. A chapter on Group Insurance as developed to the year 1927 opens logically with a reference to the actual and potential volume and quality of service in the payment of claims. Claims arise in group insurance under a blanket form of contract issued to the employer. Under this contract all the employes of a certain class or classes are insured without medical examination. The amounts of insurance are fixed by class rules.

Group Life Insurance during the year 1927 will be the medium for distributing possibly about one million dollars a week to beneficiaries of employes deceasing during that year. The amount of insurance to the individual varies in accordance with the group insurance plan adopted by the employer, but the average claim will approximate twelve hundred dollars. The claim may be paid either in one lump sum or in monthly instalments over a period of twelve months, the monthly instalments averaging one hundred dollars.

From these figures it will be deduced that about 800 workers protected by group insurance will die each week. Of the 800 about 350 will leave absolutely no other insurance. This represents something more than forty per cent of the workers deceasing under group insurance coverage. It needs little imagination to picture the effect where death finds the worker without provision for expenses consequent to fatal illness or to realize the family situation where the worker was the family breadwinner. Because of the group policy the family income from such worker will not cease with death but will be continued for approximately one year. From this angle group insurance fits into the definition of a great English newspaper as "an American scheme for giving the family of the deceased worker one year's notice of the demise of the pay check."

Averaging the amount of insurance carried on deceasing workers where in addition to group insurance the worker provided other forms of life insurance, it is found that such other insurance amounts to about $2000. This latter average includes the relatively few large individual insurances carried by high-salaried executives, whose exceptional amount of insurance serves to appreciably affect the average of the great number of smaller insurances.

A discussion of group claims reaches beyond the numerical recital of lives insured, to include the list of beneficiaries. The 800 workers estimated to die weekly under group insurance coverage during 1927 would on the average have two other persons interested directly or indirectly as beneficiaries. This brings the number of beneficiaries intimately interested in the week's claim quota to 1600. Adding the 800 deceased makes a total of 2400 lives intimately affected in the matter of the week's group insurance claim list. How intimately these claim monies reach to the closest human relationship is evidenced by the fact that the 800 claims would subdivide about as follows:

Wife, 488; children, 88; father, 13; mother, 77; estate, 35; friend, 14; sisters and brothers, 57; husband, 6; parents, 2; trustee, 2; collateral heirs, 18.

Applying these percentages of relationships to the conservative estimate that forty per cent of the wage and salary workers in the United States have no other insurance, it follows that thirty-three per cent of all the workers who die leave behind relatives of the intimate type of parent, wife or child—where without group insurance coverage the loss of the pay envelope is usually a serious matter and in many instances a desperate one.

These figures seem sufficient to establish the economic value of a system of group insurance which would provide for all workers a sum of money sufficient to meet immediate necessities consequent on death, and to supply income for the few months while the family adjusts itself financially to the loss of the worker's pay envelope.

Two queries now suggest themselves: First, why relatively so little individual insurance among the workers of the country? and second, what is the genesis of this group system which is supplementing individual insurance in covering this field of the worker?

The answers to these questions illumine the whole subject of group insurance.

Why so little other life insurance on workers? The answer is to be found in working rules which in the main prohibit the time, piece and salary worker from being solicited by the life insurance agent. Life insurance in America has gone forward with the work of the agent. The reason why there is twice as much life insurance in the United States today as there is in the rest of the world combined is due chiefly to the superiority of the life insurance agency system in this country. The agent operates to bring a message to the man who might reasonably conceive the message without the work of the agent, but does not do so in terms of action that mean life insurance protection on his own initiative. The agent is loath to solicit insurance after hours and the wage worker is loath to be solicited after his full day on the job. This field of the mass worker to the large degree indicated by the claims figures was uncultivated because its effective cultivation required a mass scheme to be applied by the employer in a mass way.

WHY GROUP INSURANCE

This general statement leads on to the answer to the second question as to the genesis of group insurance. The insurance needs of the deceased worker were evident from the occasional distressing case which would come to the attention of the employer for assuagement. Often this came to the employer in the secondhand form of knowledge that the fellow workers were digging into their pockets to make up a purse for burial or to relieve the immediate dire distress of the family.

In the old days before industrial units assumed large size, the employer knew his worker or his few workers, and the problems of the worker were made in some way the problems of the employer. With the development of mass production in huge units the employe soon lost individuality in the mass and the employer and employe alike lost something of human contact that made for co-operation in industry.

Group Insurance was born of the desire of the employer to do something in a mass way for his workers which would be frankly a bid for co-operation from the worker, on the basis of constructive interest shown by the employer in the individual members of his group of workers.

The realization that employes were not properly insured, combined with the desire for protecting employes more completely, and to add a premium to the job, as it were, by better protecting the employes and the employes' family through some death benefit, culminated in the negotiations of a large mail order house, the Montgomery Ward Company, for the insuring of its employes. The size of the proposition attracted offers from many life insurance companies in various forms of individual insurance. The cost for such forms of insurance individually at permanent level premiums was high. Combined with the demand for selection of the risks by means of medical examinations the offers on basis of individual insurance proved unacceptable. This brought about the elimination of most of the life companies in the canvass.

ORGANIZED EFFORT

The negotiations resulted in the working out of a scheme upon the yearly renewable term plan without medical examination, insuring all the employes who had served one year or more for amounts based on the weekly wage and ultimately supplied the first large case of group insurance as it is now known. This policy became effective July 1, 1912. The size of this transaction captured public imagination with the result that it was widely heralded and has become identified in public opinion as the contract upon which group insurance established its saleability. It was written by The Equitable Life Assurance Society of the United States, which Company had, in the latter part of 1911, issued its first policy of group insurance to The Pantasote Leather Company, covering a group which was then relatively small, embracing about 125 lives. This smaller group was under the management of one of the Directors of the Equitable, Eugenius H. Outerbridge, a student of industrial affairs, who proved a strong advocate on the Board of Directors Committee appointed by President William A. Day to consider what was then thought to be a revolutionary plan,—supplying life insurance without medical examination under the terms and conditions of a group contract issued to the employer. Mr. Outerbridge thus had firsthand information of the development of the group policy by the Equitable and supported his advocacy by a practical application to a company under his management.

The first organized effort to develop the business of life insurance on the group plan was the inauguration of a department of group insurance on January 1, 1912, by President William A. Day of The Equitable Life Assurance Society. This action, it is to be noted, antedated the closing of the large Montgomery Ward group by some time. At the end of 1912 the amount of group insurance reported in force was $13,172,198. Of this amount the Montgomery Ward contract supplied $6,307,734. The balance was made up of $6,864,464, of which $6,640,722 was issued by the Equitable and the remainder of $223,742 by other progressive companies which were competitors for the Montgomery Ward case and which followed the Equitable into the group field.

GROWTH

The growth of the group business is best illustrated in the table on the following page, showing the amount in force, year by year.

The only slump in the triumphant progress of group insurance recorded in the table is shown for the year 1921 where a trifling recession is noted. It

Group insurance in force:

December 31, 1912	$13,172,198
" " 1913	31,202,014
" " 1914	64,467,545
" " 1915	99,049,326
" " 1916	152,859,349
" " 1917	346,525,472
" " 1918	627,008,490
" " 1919	1,145,786,131
" " 1920	1,662,327,449
" " 1921	1,598,742,713
" " 1922	1,847,139,277
" " 1923	2,468,935,567
" " 1924	3,194,576,412
" " 1925	4,299,271,187
" " 1926*	5,600,000,000

* Estimated.

is to be remembered that this was the year of postwar industrial deflation involving much unemployment and shrinking payrolls. The Workmen's Compensation companies that year showed heavy decreases in income, which makes it the more noteworthy that group insurance should under such adverse conditions write enough new volume to practically fill in the gaps of the discontinuing patron and the shrinking employment roster. A large part of the outstanding volume of group insurance at the present time is accounted for in the business of the seven leading life companies. The number of companies actively engaged in the business is constantly increasing. More than seventy-five companies are recorded as now writing group insurance.

One of the remarkable features of group insurance to date is the low lapse rate. The net gain augmented in part by plans of insurance which increase with duration has yearly approximated the totals reported as new business.

ECONOMICALLY SPEAKING

In the earlier years exclusively and at present in degree group insurance premiums were paid entirely by the employer. The cost of a plan to supply the employes an amount of insurance equal to one year's salary, with a maximum of $3000 to those receiving more than that sum in salary, was found to average about one per cent of the payroll.

From the employer's standpoint the economic question was this: Would a payroll of 101 per cent, which would include the gratuitous element of a life insurance policy on the life of the worker for one year's salary, reaching through the worker to the worker's home where the ultimate effect of the insurance would be registered, give larger values to the employer than a 100 per cent payroll?

Perhaps the best general answer to this question of the employer was expressed by the Committee of the National Association of Manufacturers appointed to study group insurance, which reported in part:

> Your Committee believe that those having in mind the improvement of conditions of those in their employ, so far as the same may be justified by a modest expenditure, will probably find in Group Life Insurance the medium which, dollar for dollar of such expenditure, will prove most beneficial to employer and employe alike, and therefore to the general improvement of industrial conditions.

The initial cases of group insurance paid for entirely by the employer removed all fear that group insurance would not be appreciated unless the employes paid part of the cost. As the business grew, cases in which the employer provided a reasonable amount of group insurance developed a demand on the part of the employe to be allowed to obtain additional insurance entirely at the employe's own cost. This hastened the development of so-called contributory group insurance whereby the premiums are paid for jointly by employer and employe. Both plans have worked well, the tendency at the present time being rather in favor of larger amounts than were originally taken out, with the employe paying part of the premium cost.

DEFINING GROUP INSURANCE

As the group business developed, questions arose as to what was properly a group from a sound underwriting standpoint. This resulted in an agreed definition of group insurance being adopted by the Convention of Insurance Commissioners of the various states, which definition as embodied in the New York Statute is as follows:

> Group Life Insurance is hereby declared to be that form of life insurance covering not less than fifty employes with or without medical examination, written under a policy issued to the employer, the premium on which is to be paid by the employer or by the employer and employes jointly, and insuring only all of his employes, or all of any class or classes thereof determined by conditions pertaining to the employment, for amounts of insurance based upon some plan which will preclude individual selection, for the benefit of persons other than the employer; provided, however, that when the premium is to be paid by the employer and employe jointly and the benefits of the policy are offered to all eligible employes, not less than seventy-five per centum of such employes may be so insured.

The New York statutory group insurance definition has been amended within the last year or two to permit the application of group insurance to units of the naval and land militia, and under certain conditions to labor unions. These amendments, however, do not open the door widely for the acceptance of such groups because the underwriting conditions that permit employes of one employer to be safely and advantageously insured on the group plan are not in all instances sufficiently present in other forms of group.

GROUP CLASSES

The definition provides for two classes of groups, the one in which the employer pays the entire premium, and the other, the so-called contributory group, where the employe shares in the premium cost.

The contributory group, the second type of group referred to, is formed by voluntary action of the employes in which the employer joins with the employe in paying part of the premium cost. Naturally it would not be reasonable to expect voluntary action from 100 per cent of any class of employes on any proposition. Therefore the rule in a contributory group is that a minimum of seventy-five per cent of all eligible for the insurance accept the same and that the group continue to maintain at least seventy-five per cent of all the eligible employes.

Those in the employ are insured according to some class rule. By class rule is meant, for example, insuring all employes who have been one year or more in service, or employes earning say $1500 and over, per annum, or all of any particular department or activity constituting in itself a class.

These class rules will be readily recognized as necessary in group insurance since no medical examination is required. The strong support the weak. Thus does group insurance by including large classes of employes completely eliminate self-selection against the insuring company in the group where the employer pays all the cost, and in the contributory group minimizes the likelihood that the employe, conscious of his insurability, would stay out to the material detriment of the group.

Insuring employes of one employer in a going concern under class rules affords the practical assurance of an age distribution or age average for the group which will vary little. While individually the members of an employer group grow older, it does not follow that the average or age distribution is affected by that fact, because as an offset younger lives are continually coming in as the older lives retire or decease.

The more or less stationary character of the age distribution permits the use of the one-year term policy to produce practically an unvarying premium for the group. Hence for group insurance the use of the one-year term policy with its consequent low premium is sufficiently representative of current and, under ordinary conditions, of future cost.

The years have attested to the soundness of the theory of group nonmedical selection. The mortality has been well within the tabularly expected rate and has approximated the ultimate mortality rates for individual lives in which the selection has been by medical examination.

Groups other than employe-employer groups must be judged from an underwriting standpoint by practically the same standards applied to employer groups and such groups that vary from ordinary conditions may tend to lose insurability under the group plan. Many employe association or labor union groups present substantially the same aspects from an underwriting standpoint as employes of one employer, but many groups of this type do not. Here enters underwriting judgment in passing upon such groups. A recent development in group insurance is the entrance of The Labor Union Life Insurance Company, a company organized by Labor Unionites on sound old line principles, one of its chief purposes being to serve labor unions in the matter of supplying group insurance.

The life insurance companies have used good judgment in pioneering in the group insurance field with the result that the business has been written on a profitable basis. It has increased the life insurance field by enabling the life insurance companies to reach out to lives not previously available to the agent and by co-operating with the employer in insuring masses of employes in a mass way. In group contracts life insurance companies have extended life insurance coverage to 4,700,000 workers for $5,600,000,000 of insurance, using the estimated figures of December 31, 1926. To get a comparison as to what this means in insurance on the working people of this country it may be pointed out that the volume exceeds the total sum of industrial insurance in force on this Continent as recently as the year 1918. While group insurance is limited in its application to groups of not less than fifty employes of one employer and therefore must exclude all the small owners and small operators with less than fifty in the service, and for this reason practically excludes all agricultural workers, yet the sum total of lives insured represents about ten per cent of the total workers in this country.

The mass idea as introduced into life insurance by the group plan has in turn developed other plans of selling individual insurance to aggregations of employes under the Salary Savings or Salary Deduction plans. In these plans the employer fosters the taking out of life insurance by the employes and permits the premiums for such insurance to be deducted monthly by the paymaster and remitted in mass to the insurance company.

The life insurance company has by means of group insurance made far-reaching contacts with large employers that constitute important fields of influence for the extension of the regular business. The regular or individual new business of the six leading group insurance companies wholly exclusive of group has increased, from the year 1920 to the year 1925 inclusive, about four times the ratio recorded for the six leading life insurance companies specializing in regular individual business only.

BENEFITS TO LIFE INSURANCE

Group insurance has realigned and is realigning the giants of life insurance. It is significant that the so-called group companies should be also the companies making the greatest gains in regular insurance. It is also to be noted that consistent with the development of group insurance from an idea in 1911 to its present large size, that the business of both ordinary and industrial insurance has increased prodigiously. The only absolute deduction to be drawn from this is a negative one; namely, that group insurance has not retarded the development of the business of life insurance in any department. How it has helped the development in other departments cannot be stated accurately because of the variety of influences at work in the leading group companies, not the least of which is the progressive character of the companies pioneering and entering the group insurance business in the desire to extend their life insurance franchise to the fuller discharge of its obligations and privileges.

The ultimate end of group life insurance is, within the limits of good underwriting, to make group insurance as universal as the pay check. The pay check establishes the value of the worker's life and pleads the need of insurance to cover the hazard. In working toward this end the employer, the employe, the insurance company, the agent, and society at large is benefited. The benefit to society happily comes about in degree in the form of promoting production by promoting content through better industrial relationships between employer and employe.

Without attempting the baffling task of quantitatively measuring what group insurance has done or may do in avoiding wasteful industrial strife, in avoiding wasteful changes of occupation for trivial causes or in avoiding wilful neglect, is it not sufficient to conclude from the continuing rapid growth of group insurance that it fulfills at least in part the enthusiastic judgment of one great industrial organizer who said paradoxically that "the cost for group life insurance is a profit."

Life Insurance Companies and Pension Plans

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PENSION systems have their origin in humanitarian considerations. The employe who has given many years of faithful service must not in old age be thrown out of work without some means of subsistence. Unless there is a means of retiring him satisfactorily, he may be retained in the service far beyond the time when he can do his work efficiently. Although this may satisfy the employer's feeling of responsibility toward the aged employe, it may materially cut down the productive power of the group of workers. A well conceived pension plan meets the situation by supplying funds when they are needed to care for those who, for the good of the business, should retire. The retirement is effected comfortably and in a manner that does justice to all concerned.

Psychological considerations are always important in matters which affect group action. The very existence of a satisfactory pension plan conduces to better work by employes—especially by those in middle life who are beginning to see the possibilities old age may hold in store for them. It helps greatly to have them feel that they will be protected from an old age of dependent poverty. A few individuals of course will have the ability and the will power to save so that they will have funds available when old age comes. On the other hand, many will not do so and hence will present a problem when they become superannuated. Pension plans are intended to solve that problem.

Another psychological advantage of the pension plan is that workers in their prime have greater prospects of promotion, since the old age retirements encourage movement all along the line. A loyal, contented force of workers, responding spontaneously to fair treatment, is one of the secrets of profitable management.

A pension principle grown gray with age is somewhat as follows: The worker is led to anticipate a pension that will be expressed as a percentage of his average salary during, say, the last five or the last ten years of his employment. The percentage is obtained by multiplying his years of service say by 2 or 1½ or 1. There may also be a stipulation that the pension shall not fall below a stated minimum or rise above a stated maximum.

To provide such pensions employers have frequently set aside each year in a separate fund a certain percentage of the pay roll. Since pensions are obligations that normally mature only after many years, the fund in an average establishment is bound to grow to what may appear to the employer to be an inordinate size before the pension payments assume large proportions. During the period of growth—and it is likely to be a relatively long period—the employer may come to be well satisfied with his system. Everything seems to be running smoothly. Then one day a cloud "as small as a man's hand" appears on the horizon. It grows larger and larger until it becomes evident that a storm threatens. The actuary is called in. Insofar as he can make reliable assumptions as to the future, he is likely to find that the present value of the liabilities is far in excess of the assets in hand plus the present value of the sums normally to be set aside for the pension fund in the future. Either the plan must be modified or the business must shoulder a serious financial burden—perhaps an impossible one.

This has been the tragic history of many pension funds and the fact is becoming known to workers. They want certainty. Hence the old-fashioned pension fund, unless established on a sound actuarial basis (and that is frequently impossible to accomplish because the unknown factors are too numerous) does not meet the basic requirements of a satisfactory pension system. The tragic failure of the pension plan of Morris and Company, the packers, has been a striking object lesson. The facts as briefly stated by the Babson Statistical Organization in their Business Supplement of September, 1925, are as follows:

> The Morris Company Plan, started in 1909, was a contributory system with voluntary retirement at fifty-five and obligatory retirement at sixty-five. Twenty years' service was a prerequisite for the receipt of the pension. The company undertook to set aside $25,000 a year until the fund had reached $500,000. For thirteen years the plan operated and as employes retired their pensions were duly paid. By 1922 about 400 employes were thus pensioned when Armour & Company took over the Morris Company in a corporate merger. Those on the payroll of the Morris Company were absorbed in the pension plan of the Armour Company, but the 400 retired employes were left helpless. The Armour Company held they should be provided for by the former management.
>
> Here is the startling point in the situation. When experts estimated—on the basis of life probabilities of the 400 pensioners—how much money would be needed to pay their benefits, it was found that it would take $8,000,000. A court decision, following a suit by a group of pensioners, held that the pension plan created no contractual liability on the part of the company.

The primary object in seeking the help of a life insurance company in setting up a pension plan is to make certain that pension obligations will be completely fulfilled. The life insurance company's first consideration will be to furnish a definite guarantee as to what a given series of current deposits will produce in the way of future pension payments. It will not underwrite a system which promises a pension to be determined as a percentage of the worker's salary during the latter years of his employment. The unknown factors underlying that system defy accurate actuarial forecast.

THE SINGLE PREMIUM DEFERRED ANNUITY PLAN

To meet pension requirements life insurance companies have developed a plan based upon the single premium deferred annuity principle. It is a plan under which future liabilities are completely provided for as they are incurred. Premium payments are made periodically to the life insurance company which in return guarantees the payment of a stated amount of life income commencing at the retirement age. This plan has been adopted by the New York Stock Exchange for the employes of the Exchange and affiliated companies.

A description of the way in which the Exchange plan works in the case of one of the employes will help to make clear the basic principles underlying the single premium deferred annuity plan. An employe thirty years of age had been in the service for five years and was receiving a salary of $62 a week when the plan was inaugurated.

First the Exchange paid for a life income to commence at age sixty-five amounting to $10 a month—arrived at by multiplying the period of past service by $2. This obligation, having been paid for by a premium at the inauguration of the plan, was assumed by the life insurance company and, without reference to the future pension policy of the Exchange, was guaranteed to the employe provided he should remain in the service until age sixty-five.

The Exchange further undertakes, so long as the pension plan remains unchanged, to purchase each year an additional life income of $2 a month commencing at age sixty-five. Should the salary rise above $80 per week, the amount of income that would be purchased each year would be increased from $2 to $3. Assuming, however, that the salary remained below $80 there would be purchased during the thirty-five years of service to age sixty-five a life income of $70 a month (35 x 2). This with the $10 a month purchased at the inauguration of the plan would mean a life income of $80 a month or $960 a year. The life income paid for in full by the Exchange is called the *service* income.

The Exchange, however, holds out a very real incentive to the employe to save on his own account. It will double the service income that it will currently buy for the employe, provided the employe will apply at least three per cent of each month's salary (taken to the nearest dollar) to increase the life income payable at sixty-five. Three per cent of the employe's salary in the present example yields $8 per month. This payment for the remaining thirty-five years will provide a life income of $68 per month—called the *annuity* income.

Assuming that the salary will remain unchanged, the retiring income at age sixty-five will be $218 per month made up as follows:

	Per Month
Provided at inauguration of plan . .	$10
Service annuity of $2 a month purchased by Exchange each year for thirty-five years	70
Additional service annuity of same amount purchased by Exchange because employe is a depositor	70
Annuity Income provided by employe's own deposits	68
	$218

This amounts to $2616 a year, more than eighty per cent of the present salary. If the employe desires he may deposit more than the minimum of $8 per month and still further increase the retiring income arising from his own deposits.

In the event of death before the income payments begin, the beneficiary will receive the total deposits made by the employe (without interest). If the retiring income shall have commenced and the employe shall die without having received in aggregate monthly income as much as he originally deposited, the beneficiary will receive the balance. In the event that the employe becomes totally and permanently disabled after twenty years of service, payments will immediately begin on all the service annuities that have been secured for the employe up to the date of disability. In addition, payment of any further deposits on the employe's individual income annuity will be waived during disability. The effect of this waiver is to maintain the employe's income annuity certificate in full effect so that it will grow in value in precisely the same way as though he were himself making monthly deposits. Provision is made that if retirement should occur before or after age sixty-five the life income will be correspondingly reduced or increased. The employe receives a small certificate book which describes the plan and provides a space for the affixation of certain stamps evidencing the right to certain annuities as they are provided.

If employment ceases before retirement from a cause other than death or disability, the employe takes nothing with him on account of the service income for which the Exchange has been making provision with its own funds. Instead the Exchange receives an appropriate cash surrender value from the life insurance company. This cash surrender value is used in part payment of the premiums payable to the insurance company for the annuities that are currently being purchased. It is an important item and materially reduces what might otherwise be a heavy premium outlay.

As far as any individual employe may be concerned, there is a yearly increase in the premium paid by the Exchange for the given service annuity. For example, the single premium required at age fifty-five to purchase a stated life income commencing at age sixty-five will be approximately three times the corresponding premium at age thirty. If all employes who should live to age sixty-five should remain in the service, the aggregate premiums required would be continually on the increase and would prove a heavy burden to the Exchange in later years. However, there is the inevitable turn-over which is continually yielding surrender values from the service annuities of those who leave, thereby reducing the aggregate premium payments paid by the Exchange.

The single premium deferred annuity plan has the merit that the service income provided up to any given moment is completely provided for and does not create a financial problem for the future management of the Exchange. Should the Exchange ever abandon the plan, the life income that has been purchased prior to the abandonment would not be affected for the employes who remain to the retirement age. The contracts issued by the insurance company are participating so that premium payments are reduced periodically by distributions of surplus. Some additional details of the Exchange Plan are given in the Note at the end of this article, p. 40.

THE LEVEL PREMIUM PLAN

It will be noted that the single premium annuity principle is not employed in connection with the premiums paid by the employe who becomes a depositor. He pays a level premium year after year (except when his salary changes) for the income annuity he is to receive from his own payments when he attains age sixty-five. As we have seen, the level payment of $8 monthly at age thirty, continued to age sixty-five, will produce an income annuity of $68 per month. We are therefore led to a consideration of pension plans involving level premium payments which life insurance companies have developed for handling the employer's obligation.

Although the details of the level premium principle are numerous, the primary characteristic is that the contractual premium paid by the employer year after year remains unchanged. If the contract is participating the premium will be reduced by periodical distributions of surplus. The premium at the outset will be larger than under the single premium deferred annuity plan, but it will not increase each year. Also the employer receives larger credits from the surrender values of those who withdraw.

The variations in the level premium

plan concern in large measure the benefits available upon withdrawal prior to retirement. The larger these benefits, the larger must be the premium to provide a given retiring income In the Stock Exchange plan the withdrawing employe who has been paying premiums toward his income annuity receives back all he has paid in *without interest.* A footnote in the pamphlet describing the plan shows that at age thirty for example, $3 a month will provide a monthly income annuity of $25.50 beginning at age sixty-five. Under a plan in which interest would be allowed upon withdrawal this would be reduced to $16.76. Expressed in another way, the interest plan at age thirty requires a fifty-two per cent greater premium to produce the same income annuity, commencing at age sixty-five.

Applying a level premium principle, the concrete case of the employe described under the Stock Exchange plan might work out as follows: If it is assumed that the employe is a depositor we have seen that in the event of his remaining in service until age sixty-five he would be entitled to a service annuity of $150 per month. Instead of building up this income piecemeal by a series of increasing single premium deposits, the Exchange would pay the level premium on a service annuity of $150 a month. Using the same table as that underlying the income annuity paid for by the employe, this would mean an outlay of about 6½ per cent of his salary. This sounds high. However, the refunds from withdrawals would materially reduce the outlay as in the case of the single premium deferred annuity plan. The benefits available in the event of death after the life income has commenced may of course be the same under the level premium plan as under the single premium deferred annuity plan.

GENERAL CONSIDERATIONS

It is not the function of this article to express a preference for one or the other of the two plans. Each has its merits. The specific circumstances may indicate which one would be the more satisfactory in any given case. Technical advice, however, should be sought. Life insurance companies specializing in the meeting of pension needs are always glad to help. The working force must be classified by age, sex, salary and period of service so that concrete figures may be obtained. If the employer is to receive a surrender value from the life insurance company when an employe drops out, then a rate of withdrawal will be assumed and will play an important part in the estimate of the cost to the employer.

It is generally accepted that the most successful pension plans are those which elicit active support from the employes. This support is evidenced by their contributing a part of the cost. In the Stock Exchange plan it will be recalled that the employe who is not a depositor receives merely a minimum unconditional service income. The Exchange undertakes to double the service income currently provided if the employe becomes a depositor by contributing at least three per cent of his salary. It should be the aim of all pension plans to encourage the employe to make some provision for his own old age.

A formal pension plan involving a specific retiring income for each individual should not be applied to a group of employes having a high rate of turn-over. If in a given age group, say the twenties, only one out of every twenty-five employes is likely to be in the service at the retiring age, it would be wasteful to keep a complicated set of accounts for each of the twenty-five in order that the one person who lives to the retiring age may receive a pension. To meet this obvious difficulty it is sometimes practicable to apply the plan only to the employes as they come into a certain classification set up to eliminate the employes who are most likely to be impermanent. For example, an employe might not be brought into the calculation until he had attained a certain age and served a minimum number of years.

If it is impossible to establish a practicable classification that will produce a group showing a moderate rate of withdrawal, then the formal plans such as we have been discussing are of doubtful value. They would involve too much wasteful lost motion. About the best solution in a case of this kind is for the employer to set aside regular sums with which to build up a fund to buy annuities for the employes who reach the retiring age. The annuities would be purchased from a life insurance company so that their payment, once contracted for, would be put beyond the vicissitudes of the business.

The amount to be set aside should be determined with the aid of a qualified actuary. It would probably be expressed as a percentage of the current pay roll. However, at best it is difficult to make an accurate forecast since the uncertain element of persistency in the service plays a large part in the computation. Take for example a group of 100 employes, aged thirty to thirty-five. Whether five or ten or twenty will be in the service at age sixty-five, obviously has a large bearing on the amount of money that must be set aside to provide the premiums with which to buy the retiring income as the employes reach the retiring age. In passing it may be worth remarking that by an arrangement with a fiduciary institution the employer can relieve himself of the management of the accumulating pension fund. Such an arrangement places the care of the funds in the hands of those skilled in investment matters and more effectively separates the pension fund from the current conduct and demands of the business.

In the plans that have been discussed the assumption is made that the employes who withdraw prior to the retirement age from a cause other than death or disability will have no vested interest in the funds set aside by the employer for his ultimate protection. This proceeds on the theory that the pension is to be paid in return for length of service and not on the theory that the pension funds are put aside as in a sense a part of the pay of the employe to which he is entitled if he leaves the service. Obviously the cost of a system which would give the employe a vested interest in the amount which the employer sets aside for his benefit, would be large.

ACCRUED LIABILITIES

No article dealing with pensions would be complete without reference to those troublesome things technically known as the "accrued liabilities." Like the poor, they are always with us. They are the major problem requiring solution in the establishment of practically every pension plan. What shall be done to make up for the past years during which there was no pension plan and in which, therefore, nothing was laid by to care for the employes who are approaching the retiring age? To build up a pension fund for them in the few years remaining before retirement requires a large sum that frequently weighs heavily on the employer.

There is no magic way by which the

problem of the accrued liabilities can be solved. They must be technically computed and then faced. They need not be met in one lump sum payment. They may be met in a series of payments extending over an appropriate period of years. The method in each particular case must be determined in the light of the given circumstances.

In the brief space available it has been possible in this article merely to outline a few of the phases of the great problem of pensions. Experience has amply demonstrated the need for bringing the maximum of certainty into any pension plan. This is the primary reason why the help of life insurance companies is being sought. When the group of employes is unstable, continually changing, the problem is quite difficult. The life insurance company cannot be of much help during the active service of the employe. It can, however, take over the retiring income by selling an appropriate type of annuity contract when the retirement occurs. On the other hand, when a group of employes is sufficiently stable, the life insurance companies can render material assistance from the outset. There is an increasing tendency in that direction.

Note: Additional Details of the Stock Exchange Plan

(In this note are included a few additional details of the Stock Exchange Plan which was described in its application to an employe aged thirty who had been in the service five years when the plan was inaugurated.)

For each year of service during which an employe's salary falls into one of the following classifications, the employe will receive an unconditional service annuity, paying a life income from age sixty-five as follows:

Salary	*Annuity for Each Year of Service*
Class A—$40.00 a week and under	$1.00 a month
Class B—$40.01 to $60.00 a week	1.50 a month
Class C—$60.01 to $80.00 a week	2.00 a month
Class D—$80.01 a week and over	3.00 a month

For service rendered before July 1, 1925, when the plan was inaugurated the employe was considered being in the Salary Class in which he was on July 1, 1925.

If an employe becomes a depositor by depositing through pay roll deductions each month a minimum of three per cent of his salary (to the nearest even dollar), the Exchange will double the service annuity insofar as future service is concerned. Thus, for depositing employes, the following scale of service annuities will hold:

Salary	*As to Service Before Beginning Deposits*	*As to Service After Beginning Deposits*
Class A—$40.00 a week and under	$1.00 a month	$2.00 a month
Class B—$40.01 to $60.00 a week	1.50 a month	3.00 a month
Class C—$60.01 to $80.00 a week	2.00 a month	4.00 a month
Class D—$80.01 a week and over	3.00 a month	6.00 a month

The following table gives the amounts of income annuity, in addition to service annuity, secured by men employes who deposit either $3 or $5 or $10 each month:

Age at Entry into Plan	*Monthly Deposits* $3.00	 $5.00	 $10.00
	Income Annuity Payable Monthly for Life After Age 65		
20	$45.42	$75.70	$151.40
25	34.32	57.20	114.40
30	25.50	42.50	85.00
35	18.54	30.90	61.80
40	13.11	21.85	43.70
45	8.85	14.75	29.50
50	5.55	9.25	18.50

If the employe leaves the employ or withdraws from the plan, he has three options:

(a) He may receive a full income annuity on his deposits by continuing to make regular deposits directly to the insurance company until age sixty-five, or

(b) He may receive a monthly income for life after age sixty-five proportionate to the deposits he has already made, or

(c) He may receive his money back in full (without interest).

The Development of Adequate Protection for the Disabled Life Insurance Policyholder

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ONE of the most impressive features in the recent development of the life insurance business has been the rapid increase in the value and popularity of the disability provision in life insurance policies. Only twenty years ago the disability provision was a crude experiment, adopted hesitatingly by a few life insurance companies. It had many imperfections, its worth as an insurance measure was comparatively little. Like the "horseless carriage" it was viewed with suspicion by some, and dire predictions were made regarding the difficulties and disappointments which would follow its adoption.

During the last two decades, however, many important changes have taken place in the quality of the disability protection offered, the attitude of life insurance companies towards the innovation, and its reception by the insuring public. Today, the amount of life insurance outstanding in the United States and Canada under policies containing a disability provision totals over $29,000,000,000, according to an estimate based on data recently obtained from a large number of representative companies, and this huge amount is being increased by about $4,000,000,000 yearly. About thirty-eight per cent of the new life insurance policies now being issued include a disability provision and 253 out of 259 companies are using such a provision in their contracts. The economic significance of this development is shown by the fact that already the disability benefits promised by outstanding life insurance policies total more than $3,200,000,000 yearly, or nearly as much as the annual expenditures of the United States Government.

There are several reasons for this tremendous growth in the amount of disability protection furnished by life insurance companies. It is obvious that the value of the disability provision as a "talking point" in the sale of life insurance is very great. Total and permanent disability is feared instinctively by everyone. It does not appear so remote as death or old age. To a man or woman whose entire income would cease at disability the appeal furnished by the disability provision is strong.

Furthermore, the modern disability provision is being accepted as a sound insurance measure. It has been said that "*life insurance is a system devised to protect someone against the economic loss caused by the termination of a producing power.*" The producing or income-earning power of a person may be terminated by any one of the three major physical hazards of life—death, old age, and total and permanent disability. The well-known endowment policy furnishes insurance payable if the insured should reach old age or if he should die before that time. The disability provision now furnishes protection in case the insured should be totally and permanently disabled. Thus the policyholder's insurance program may become definite and well-rounded. Should his earning power be terminated by any one of these three causes, a life insurance policy of sufficient amount will provide funds to relieve the financial strain thus created.

It is a fair question, however, to ask whether the modern disability provision actually is meeting this economic need and furnishing adequate disability protection. Is the increasing popularity of the disability provision fully warranted? In order to answer this question dispassionately, let us analyze the modern disability provision and determine whether it is meeting the needs of the disabled policyholder.

MODERN DISABILITY PROVISION

There are two important parts of a disability provision: first, the definition of disability which indicates the circumstances under which the insured will receive disability benefits; and second, the description of the benefits to be given if the disability should occur. As each of these parts has a great bearing on the value of the disability provision, it will be enlightening to consider them separately.

The Definition of Disability.—In framing the definition of disability, it has been an almost universal practice to ignore trivial disabilities which have no great economic significance. The "termination of a producing power" by bodily injury or disease is the contingency against which protection is desired. Consequently, until recently, the disability provisions have furnished protection only against "*total and permanent disability.*" Temporary disability, interrupting the insured's income-earning ability through a short sickness, or partial disability reducing somewhat his earning power but not terminating it, have not been covered. These less serious types of disability have not been considered to be in the same class as the three major physical hazards, death, old age, and total and permanent disability. Another practical reason has been that the premium for the disability provision would be increased considerably if benefits were to be paid on account of these relatively minor types of disability. A typical policy definition of "total and permanent disability" is as follows, the insured being entitled to qualify for benefits under either part of the definition:

(1) The entire and irrecoverable loss by bodily injury or disease of the sight of both eyes or of the use of both hands or of both feet or of one hand and one foot; *or*

(2) Disability caused by bodily injury or disease, which wholly prevents the insured and presumably will for life continuously and permanently wholly prevent him from engaging in any business or occupation or performing any work for compensation, gain or profit.

Under definition (1) certain severe forms of disability are specifically covered even if the insured may be able to earn an income in spite of his handicap. This definition is used by about twenty-nine per cent of the companies, most of the remainder requiring that the two hands, two feet, or one hand and one foot must be completely severed at or above the wrist or ankle respectively. The tendency seems to be, however, for companies to adopt the more inclusive provision quoted above.

Definition (2) is a much more important one as most of the total and permanent disability claims fall within its scope. The disability must be total so that it will "wholly prevent the insured from engaging in *any* business or occupation or performing *any* work for compensation, gain or profit." This seems a stringent provision, that the policyholder must be unable to engage in any conceivable occupation of the most trivial nature. In the actual handling of claims, however, companies have considered a person as totally disabled if, *to all intents and purposes*, he is prevented from working for a living because of bodily injury or disease. A consideration of the causes of disability shown below will reveal the fact that, in practice, the disability provision actually covers those types of severe disability which prevent the insured from earning a livelihood.

The further requirement under definition (2), that the total disability shall be presumably *permanent*, has created some difficulties in the handling of disability claims. It is often impossible for any one to determine with certainty whether a given total disability is or is not permanent. The best of medical authorities may differ in the diagnosis of a given disease and the prognosis of its future course. In order to minimize the resulting complications, a number of companies have adopted a reasonable interpretation of 'permanent" disability so that cases of total disability which undoubtedly will be of long standing are considered permanent. The fact that many policyholders granted disability benefits have recovered from their "permanent" disability shows that companies have handled this matter in a liberal way. Nevertheless, the requirement that the disability shall be presumably permanent necessarily introduces a certain area of doubt into the disability provision.

In 1920 the difficulty was solved by a further provision that total disability would be presumed to be permanent after it had existed continuously for ninety days. This was a great step in advance, as any doubt regarding the permanency of the disability was resolved in favor of the policyholder after ninety days. This broadened definition, which is popularly known as the "ninety days" clause, is being adopted rapidly and it is estimated that over sixty-five per cent of the new insurance now issued with a disability provision contains such a definition.

It would seem that this "ninety days" provision should cover any disability which is likely to cause either the termination or the serious interruption of the insured's earning power. However, in order to settle this question let us analyze the types of claims actually approved under this definition.

Analysis of Actual Disability Claims.—In 1926, the Actuarial Society of America published the results of an investigaton of 6845 disability claims experienced under the "ninety days" clause by life insurance companies in the United States and Canada. The various causes of these claims are shown in the following table:

TABLE I—CAUSES OF DISABILITY UNDER "NINETY DAYS" PROVISION

Cause	Percentage of Total Disabled
Tuberculosis (mainly of lungs)	20
Accidents	18
Neuralgia, neuritis and similar diseases	8
Insanity, melancholia, paresis and neurasthenia	5
Appendicitis	5
Rheumatism	4
Cancer and other malignant tumors	3
Diseases of bones and organs of locomotion	3
Heart disease	2
Bright's disease	1
Other causes	31
	100

Tuberculosis of the lungs is the most important single cause of disability. The "ninety days" provision gives most efficient protection in event of disability from this cause. It insures that the policyholder will receive benefits during the remainder of his total disability, even if it seems likely that an early recovery will result. By reason of the disability benefits received, the insured may be enabled to secure proper medical and sanitarium treatment, so that the likelihood of recovery is made greater and the period of total disability shortened—a most constructive economic result.

The percentage of disability claims resulting from accident is larger in the above experience than normally will be obtained after the "ninety days" provision has been in use for a longer period and a greater proportion of policyholders has reached a more advanced age. At the older ages, both tuberculosis and accident become less important relatively and there is an increasing proportion of claims from degenerative diseases and insanity. As has been pointed out by other writers on the subject, *disease* is by far the most important cause of total disability, although disability caused by accident attracts attention because of its more sensational nature.

The Risk of Disability.—The types of disability set forth in Table I vary widely in their effect upon the finances of the insured and his family. Some are of comparatively short duration, others may be expected to persist for life. The economic importance of the disability provision depends on two factors: first, the size of the risk of disability against which protection is offered; and second, the length of time for which the disability continues and benefits are paid. It will be interesting to attempt to measure these two factors and thus to make what may be termed a quantitative and qualitative analysis of the risk of disability. To obtain the information necessary for such an analysis, reference has been made to the published disability experience of life insurance companies,[1] to the mortality experience of the company with which the writer is connected, and to fire insurance rates for protected brick and frame dwellings located in Philadelphia and its suburbs.

The first column of the following table traces the subsequent fortunes of a group of 1000 men aged twenty-five. For example, it shows that before age sixty about 213 of them will have died; and about 162 will have become totally disabled for a longer or shorter period of whom fifty-two will live and remain disabled for two years or more. A similar table is given for 1000 men aged thirty-five, forty-five, and fifty-five respectively. These life histories are traced only to age sixty, as the period before that age represents the major part of the average person's income-earning career and the comparisons thus have a greater economic significance.

Most of the cases of disability which continued for less than six months were terminated by the recovery of the policyholder; but nearly all of those cases continuing for at least two years were terminated by death, the disability provision thus furnishing protection to the insured during his remaining lifetime.

Several interesting deductions may be made from this table. Under the "ninety days" disability provision, the likelihood of becoming disabled before age sixty and receiving benefits for a longer or shorter period is over three-fourths as great as the risk of dying before that age. The risk of becoming disabled before age sixty and continuing in this condition for at least two years is several times as great as the chance of death from accident before

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[1] The data for "Class (2)" and "Class (3)" of the Actuarial Society investigation above mentioned, "Class (3)" being given double weight.

TABLE II—APPROXIMATE NUMBER OF POLICYHOLDERS OUT OF 1000 EXPECTED TO SUFFER BEFORE AGE 60 THE CONTINGENCY SHOWN

Contingency	Out of 1000 Men Aged 25	Out of 1000 Men Aged 35	Out of 1000 Men Aged 45	Out of 1000 Men Aged 55
Disability Under "Ninety Days" Provision, Continuing for the Following Period After Benefits Commence				
Any period whatever	162	140	112	55
At least 6 months	99	86	69	34
" " 2 years	52	46	37	19
" " 5 "	32	30	25	12
" " 10 "	22	21	17	8
Death				
From any Cause	213	185	147	59
" Accident	16	13	9	2
" Heart disease	26	25	21	7
" Tuberculosis	22	14	8	2
" Pneumonia	16	14	11	5
Fire Loss on Average Residence				
The total fire losses of any size paid to the 1000 men before age 60 are equivalent to payment of full value insured to about	34	24	14	5

age sixty. In fact, the chance of becoming disabled before age sixty and remaining so for at least *ten years* is nearly as great as the probability of death before age sixty from such an important cause as heart disease.

The financial effect of the residential fire hazard is shown by the fact that among 1000 men aged thirty-five, the aggregate residential fire losses experienced before age sixty are, on the average, about equivalent in amount to the payment of the full amount of the fire insurance policy to twenty-four men out of the group. In reality, of course, the average loss by fire is a small proportion of the amount insured, and the number experiencing a fire loss is greater. At age thirty-five, twenty-one may expect to become totally disabled before age sixty and remain so for at least ten years. The financial consequences to twenty-one persons, resulting from such a lengthy disability with the consequent termination of all earned income, would appear to be much greater than that of complete loss of one's residence by fire occurring to twenty-four persons. Prudent men protect themselves against the risk of loss by fire; this comparison emphasizes the wisdom of carrying insurance against the risk of disability.

It should not be inferred, however, that the disability provision is the most important part of the life insurance contract. The above table shows that the risk of death is considerably greater than the risk of long continued disability and the likelihood of living until old age saps the strength and earning power is even greater. The disability provision, however, fills a distinct part in "completing the circle of insurance protection" and if it is omitted from the policy contract there is a substantial risk left uncovered.

BENEFITS IN EVENT OF DISABILITY

The second important part of a disability provision is the section which describes the benefits granted if the policyholder should suffer disability as defined in the policy. Here, too, there has been a great increase in the value of the disability provision in the last two decades. Let us examine the modern disability clause in the light of the needs of a disabled policyholder.

As long as the insured remains disabled without income, his family is in worse financial straits than if he were dead. To the living expenses of the family must be added the cost of any doctors' and nurses' services, hospital charges and other expenses of a disabled person. There is a great need for *income* to replace in part the earnings of the insured which were terminated by the disability. Furthermore, the life insurance carried by the insured is in danger. The premium payments become difficult to meet and, on the other hand, if the policy has a cash surrender value, there is a strong temptation to cancel the insurance outright and to obtain much needed funds. In order to remove this temptation and to preserve the insurance, it is essential that no premium payments should be required during the insured's disability and that an income of a fixed amount should be paid to him.

The modern disability provision meets this situation adequately. As soon as the insured becomes eligible for disability benefits, he is relieved from the payment of further premiums and commencing on the date when due proof of approved disability is presented to the insuring company, he receives a monthly income of $10 for each $1000 insurance, as long as he remains totally disabled. Under a policy for $25,000 insurance, for example, this income would be $250 monthly, a substantial amount. Many companies provide for the disability income to be continued for the life of the insured, so that even after the maturity of an endowment policy the disability income is paid as long as the total disability exists. This provision is a rather liberal one and while it may do some violence to the theory that the proceeds of the matured endowment policy are intended to replace the insured's lost earning power thus making the disability income redundant, nevertheless, the additional funds are welcome as many policyholders do not carry an adequate amount of life insurance.

Under the modern disability clause, the payment of these disability benefits does not interfere with other policy provisions. Dividends, cash and loan values, the insurance payable to the beneficiary if the insured should die or to himself at the maturity of an endowment policy—all are the same in amount as if the insured had not been disabled but had continued to pay premiums. This marks a great advance over earlier forms of disability provision, under which the insured received the disability benefits at the expense of the beneficiary and the insurance payable to the beneficiary was reduced materially if not entirely after the disability of the insured had continued for a long period. Fortunately, this rather undesirable feature appears in but few disability provisions now issued.

Space will not be taken to make an inventory of the less liberal disability provisions used by some life insurance companies in connection with new insurance. Time and the healthful influence of competition will tend to cause the improvement of those provisions which are seriously inferior. The situation today is far different from that outlined twelve years ago in these pages,[2] at which time many objectionable disability provisions were to be found and grave defects existed in many others. The greatly inferior clause is now the occasional exception. A few provisions survive which not only require that the disability shall be both total and permanent, but that the first payment of disability income shall be made six months after the fact of total and permanent disability has been established. This clause is manifestly imperfect from an economic point of view, because of the hardship which such a long waiting period entails upon the insured and his family. Several other clauses provide that a waiting period of thirty, sixty or ninety days must elapse before proof of disability may be submitted even if the disability is total and obviously permanent. These requirements seldom appear in the newer "ninety days" provision, which usually provides for benefits to commence immediately (or practically so) upon receipt of proof of disability covered by the policy.

OTHER FEATURES

Limiting Age.—Nearly all of the modern disability provisions cover only disability occurring before the insured reaches age sixty, although a few extend this limiting age to sixty-five. Such a limitation is necessary because it is difficult to obtain reliable statistics regarding total and permanent disability at the older ages, and disability due to "bodily injury or disease" cannot be distinguished always from disability due to the infirmities of old age. A few companies provide a modified and smaller benefit in event of disability after the limiting age. This benefit often takes the form of relief from payment of premiums, such premiums as are waived to be deducted from the insurance payable to the beneficiary.

Women and the Disability Provision.—An interesting anomaly is found when the disability provision is issued to women. The death rate among business women is favorable, thus making them excellent risks for life insurance. The rate of disability, however, is about fifty per cent heavier than among men. As an offset to this higher claim rate, some companies charge women a fifty per cent higher premium for the disability provision, while others charge the same premium as for men but modify the disability benefits correspondingly. Still other companies do not issue the disability income provision to women under any conditions, while on the other hand some companies grant the provision to women on the same terms as to men. Most companies, however, do not issue a disability provision to married women. The whole situation evidently is in a transitional stage with companies endeavoring to find the best solution consistent with sound insurance principles.

Limits of Amount.—The companies establish limits of insurance in connection with which they are willing to issue the disability provision. These limits are usually not over $25,000 or $50,000 for the disability income provision and $50,000 to $100,000 for the premuim-waiver-only provision. It is often required that the insured's disability coverage in all companies combined must be well within the amount of his earned income which would be terminated if he should become totally disabled. These limits are necessary as the incentive to malingering is greater and the tendency is for a disability claim to continue for a longer period, in the case of a person who would receive a disability income almost equal to that derived from his regular occupation.

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[2] Bruce D. Mudgett:—"The Total Disability Provision in American Life Insurance Contracts," Supplement to *The Annals* of the American Academy of Political and Social Science, May, 1915.

RECENT DEVELOPMENTS

It is evident that the development of the disability provision has by no means ceased. Clauses with new variations in the definition of disability and the benefits specified are appearing from time to time. As some of these provisions may have an influence on the development of the disability provision in the near future, it will be interesting to consider them.

Extension of Benefits.—Although the income payable during disability is usually described as $10 monthly for each $1000 insurance, certain departures from this standard have been made recently. Two companies, at least, fix the amount at $15 monthly per $1000 insurance. At least three others provide for the income to be $10 monthly per $1000 insurance for the first five years of disability, $15 monthly for the second five years and $20 monthly thereafter. This "accumulative" benefit does not increase the premium greatly, for, as shown in Table II, the increased benefits after the fifth year would be received by only about twenty per cent of the persons who had become disabled. Another company uses an alternate disability provision specifying an income of $5 monthly per $1000 insurance. A few companies do not provide for any income whatever, limiting the disability benefits to the premium waiver only, and many others will issue the premium-waiver-only provision on request.

In this connection it may be interesting to discuss what general considerations should be borne in mind in establishing the amount of monthly disability income for each $1000 insurance under the policy. Undoubtedly the disability income should be large enough to minimize the temptation to surrender the policy for its cash value. However, the income payable in event of disability should not exceed greatly the income which would be available under the so-called optional methods of settlement when a policy is terminated by death of the insured or by maturity as an endowment; otherwise the least important of the three major contingencies covered by the policy would be given the most weight. While no dogmatic conclusion can be reached, the income of $10 per month per $1000 insurance seems to be a reasonable one in the light of these considerations, the income of $5 monthly appears somewhat small and the income of $20 per month disproportionately large.

Another one of the newer developments is in regard to the exact date from which the benefits commence. The usual "ninety days" clause provides that if the insured is totally but not presumably permanently disabled, the first monthly income payment falls due after he has remained totally disabled for ninety days, no payments, however, being made for the ninety days. Several disability provisions which have appeared recently specify that in such case, after the insured has remained totally disabled for ninety days, the disability income will be retroactive so that the first monthly payment will be made as of the end of the first month of total disability, the temporarily disabled insured thus receiving two more monthly payments than under the older form of "ninety days" clause in general use. The main disadvantage of this new provision is that much of the increase in premium which is required for it, is due to the additional income payments to be made on the many cases of total disability of short duration, whereas the main purpose of the disability provision is to afford coverage in cases of long continued total disability.

A recent development has been the definite provision that disability benefits will be paid from the date when the policyholder was first eligible to receive them, regardless of the time elapsed until the company receives notice of the disability. At present the majority of the disability provisions specify that benefits shall begin only "after date of receipt by the company of due proof" of disability. The reason for this requirement is obvious. When a considerable length of time has elapsed since the beginning of disability it is difficult to establish the exact date when it commenced, as many facts have become blurred with the passing of time and the usual independent medical examination of the insured at the outset of his disability cannot be made by the company. On the other hand, it has been felt that if, for example, the policyholder had become insane and was confined to an asylum and the disability claim was not presented perhaps because the family was unaware of the existence of the disability provision, it is rather illiberal not to date back benefits, if all the facts are clear.

These points of view are in some cases being crystalized in disability provisions, a few companies specifying that benefits shall be dated back to the beginning of disability whenever occurring, provided the disability is still in existence, while others provide that the benefits shall be so dated back for not more than six months. This latter provision has been adopted by several companies recently and has gained favor because it seems to be a practical solution of the problem, furnishing a middle ground where the consequences of the delay in making claim are shared by the insured and the company.

Variations in the Definition of Disability.—The provision in the "ninety days" clause that total disability will be presumed to be permanent after it has continued for ninety days, is varied by some companies, a period of thirty days, sixty days or six months being used. If the period specified is too short, many relatively minor temporary disability claims must be provided for, thus making the premium considerably higher. On the other hand, a waiting period of six months entails hardship as already stated above, because of the long period of time before benefits commence. The "ninety days" clause seems to furnish a reasonable compromise between these extremes.

Occupation Disability Provision.—Another recent development has been the broadening of the definition of disability to cover cases where the disability causes loss by preventing the insured from following an occupation for which he has undergone a long and specialized training. If, for example, a successful practising dentist should lose the fingers of one hand and thus be compelled to give up his profession, he would suffer a financial loss proportionate to the difference between the income he was receiving from his profession at the time of his disability and that which he is able to earn thereafter. In former numbers of *The Annals*[3] it was urged that the definition of disability should include disability which renders the policyholder incapable of pursuing his regular vocation. It was pointed out that the use of such a definition would not increase greatly the premium for the disability provision, but, on the other hand, the provision would give more adequate coverage to persons engaged in professional work.

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[3] Bruce D. Mudgett, *The Annals* of the American Academy of Political and Social Science, Supplement for May, 1915, p. 47; regular number for March, 1917, p. 144.

In the last three years two life insurance companies have commenced to issue such a disability provision to persons engaged in certain specified professions, at a premium which is about fifty per cent higher than that charged for the regular disability provision used by these companies. This broadened provision is similar to the "ninety days" clause described above, except that total disability is defined as "disability caused by bodily injury or disease which wholly prevents the insured from following *his* occupation." The professional men covered are physicians and surgeons, lawyers, qualified osteopaths, dentists, auditors and accountants possessed of proper degrees, and male teachers in high schools or colleges who have been teaching for at least three years prior to application. This definition of disability is somewhat like those employed for several years by certain accident and health insurance companies.

Different opinions exist regarding the desirability of using this definition of disability in the life insurance contract. One point of view is that it is unwise as well as economically unsound to use a disability provision which will reduce the financial incentive for a policyholder to make the effort to become successful in a new occupation after he has suffered a disability which prevents him from following his former occupation. If a young dentist should lose the fingers of one hand and be prevented thereby from following his occupation, there would be many other gainful occupations open to him where his impairment should not interfere greatly with his earning capacity. At worst, his disability would cause a *temporary* loss or reduction of income. The payment to him of a disability income *for life*, would seem to be an economic absurdity. On the other hand, if he were a much older man at the time of disability, it would be much more difficult for him to adjust himself to the changed conditions and to enter, with any prospect of success, a new strange field of endeavor, although even here in many cases the change of occupation might be accomplished successfully after a period of readjustment.

It is felt by some students of the subject that the present "ninety days" clause with the usual definition of total disability affords protection in most of the economically deserving cases encountered, without making it necessary to pay a disability income for life to a policyholder with a minor but permanent physical disability who, while prevented from engaging in one specialized occupation, may be able to engage in other equally gainful occupations after a period of readjustment. As the "occupational" clause has been applied only to a very few specified professions, and its extension to other occupations would not only create some underwriting difficulties but would also require an elaborate classification schedule similar to that used by accident and health companies, thus increasing the expense to all for the benefit of a few, it is felt that where special "occupational" coverage is desired the client could obtain it from an accident and health insurance company, although this course would not be necessary in most instances.

The other point of view is well stated in the former numbers of *The Annals* referred to above. It will be interesting to follow the development of this "occupational" disability provision and to see to what extent it will be adopted by life insurance companies.

SIGNIFICANCE OF DEVELOPMENT OF DISABILITY PROVISION

One of the most significant features of the rapid development of the disability clause has been the fact that this development has been entirely unaccompanied by regulatory state legislation. In the earlier days of life insurance it was not uncommon for companies with inferior or deficient policy provisions to be compelled by legislative enactment to improve their contracts.

The history of the disability provision exemplifies the great change which has taken place in this respect. The development of the disability provision from its early crude stage and the almost universal improvement of inferior clauses have come solely through the initiative of the life insurance companies themselves. They illustrate vividly one of the most interesting phases of modern business—the continual effort to uncover latent economic needs and to supply the means with which to meet them.

Unhampered by legislative restrictions which at times may crystallize the *status quo* instead of encouraging further upward evolution, and urged by the stimulus of healthy competition and desire for company leadership in progressive measures for the benefit of policyholders, the companies have broadened and liberalized the disability provision until it has become a valuable feature of the life insurance contract. The disability provision is a child of the modern institution of life insurance and the tremendous popularity which it now enjoys is a testimony to the fact that, in developing this newer phase of insurance protection, the efforts of the companies have met with public approval.

Life Insurance as an Aid to Education and Philanthropy

By John A. Stevenson, Ph.D.

Second Vice-President, The Equitable Life Assurance Society of the United States

COMMENTS on the rapid growth of the life insurance business during recent years usually are to be found on the financial pages of the various daily papers. It is not strange, therefore, that the facts and figures most often brought before the attention of the public are those dealing with the gigantic volume of funds accumulated by the life insurance companies and the number of billions of insurance in force.

Like all business organizations, the various life insurance companies are making an effort to increase their volume of business year after year, and the public is interested in the aggregate result. Few people stop to realize, however, what the life insurance companies are trying to do in the way of improving the service they offer to the public.

It goes without saying that the various companies are not attempting to offer yearly model policies, including advantages and features in the "1927 models" which the "1926 models" did not possess. What they are attempting to do is to assist their policyholders in carrying out their plans for the future.

As a Philanthropic Agency

Formerly most insurance was bought and sold on the theory that a $5000 or $10,000 policy was a good thing to have, and the bigger the policy the better off both agent and policyholder were. During the past few years, however, the insurance companies have stressed the importance of insurance as a means of serving human needs; that is, they have attempted to show how insurance may be used to extend the economic value of a human life into the future, and they have provided modes of settlement under their contracts by means of which policyholders may attain specific objectives.

The increasing appreciation of the value of insurance on the part of the public and the realization that insurance provides a practical method of assuring the fulfilment of particular plans, have resulted in the use of life insurance not merely for family protection, but for the replacement of a key, man's financial value to his business, for the prevention of shrinkage in estates due to inheritance taxes, and for philanthropic purposes.

Most life insurance is bought today and most life insurance will be bought tomorrow in order that when a policyholder dies, the insurance money may, wholly or partly, replace his earning power to his family. When we realize that in this country today there are over 58,000,000 policyholders whose total life insurance amounts to approximately $80,000,000,000, and take into consideration the fact that a large part of this insurance is for the protection of women and children, the institution of life insurance assumes gigantic proportions as a philanthropic agency.

Helping the Individual

In many cases the life insurance funds constitute the only money on which the family can depend in case the breadwinner dies. Even a small amount of life insurance may mean the difference between independence and dependence for that family. A survey of the "Aged Clients of Boston Social Agencies" showed that 213 of the 404 women needing charitable aid received less than six dollars a week. It requires little effort, therefore, to visualize the benefits of a life insurance policy which would provide a life income of $25 a month. The preface to this survey, moreover, makes the following significant statement:

> The results of this study prove that the risks of being left without the means of meeting the economic helplessness or expensive illness of old age are not confined to the workers with low earning capacity, but are shared by persons in all ranks of society.

Life insurance, likewise, makes its contribution to education by helping the individual. Most present-day parents are anxious to have their children equipped for successful careers by adequate education. The stumbling block is often lack of funds. A laboring man may earn enough to support his family and send his son to high school as long as his income continues. But suppose the father is killed in an accident when the boy is still in the lower grades. The chances are the son will have to leave school as soon as the law permits in order to support himself, and possibly to support his mother also, unless life insurance funds replace the father's earning power in the form of an income payable until the boy has at least had an opportunity to finish high school. In cases of this kind, life insurance furnishes the one method by which the breadwinner can protect his family. Day-by-day expenses take the greater part of his wages. He can, therefore, save only relatively small amounts yearly and other systems of saving would provide for his family only the amounts which he had actually saved instead of the amounts he had hoped to save if he lived.

While, of course, a college education in most cases cannot be regarded as an absolute essential to success, it is nevertheless true that under modern business conditions it is becoming more and more of a necessity if a man is to make his mark in the world. Between 1910 and 1923, for example, the enrollment in our higher institutions of learning has almost doubled, rising from 340,628 in 1910 to 626,124 in 1923. Since the increase in our population during this period was not nearly so great, rising from 91,972,266 in 1910 to 110,663,552 (estimated) in 1923, the fact seems obvious that if a greatly increasing proportion of our citizens are college-trained, those who do not have this training will be more and more at a disadvantage.

Many life insurance companies have made special plans for safeguarding the education of the youth of this country by means of "educational policies." In the event of the father's death, the funds payable under an "educational policy" are held on deposit by the insurance company until the child reaches college age, and then may be paid in instalments during the college course.

Since, even if the father is living, lack of funds at the time a boy or girl is ready to go to college is often the difficulty which stands in the way of a college education, a simple method of guaranteeing that the necessary funds will be available, whether the father lives or dies, is to have the policy written on the endowment form. In case the father dies, the funds may then be held on deposit by the insurance company until needed for college expenses; if the father lives, the funds will be ready without causing a heavy drain on the family pocketbook.

If we look on life insurance as a means of serving human needs, such as the need for support on the part of the family and for education on the part of the children, there is no reason why it should not be looked upon as a means of serving institutional needs as well. The same difficulties might prevent a college from receiving a gift which one of the alumni would like to have made, as might stand in the way of a child's receiving the college education his father would like to have given him: the estate might not be large enough at death, or the necessary funds might be lacking at the time needed during the man's lifetime. In both cases, life insurance would furnish a practical plan for replacing the value that was lost.

If all the money were given to charitable institutions that people *intended* to give, their endowments would be vastly increased. A young man leaves college with a warm feeling in his heart for his Alma Mater and with the idea that "later on," when he has been able to save money, he will make a substantial contribution in return for advantages he has received—but he never saves the money. A woman feels she would like her annual contribution of $50 to a foreign missionary school to be continued after she dies, but a gift of $1000, to create a fund on which $50 a year interest could be earned, would be out of the question during any one year, for it would mean giving up nearly her whole allowance for that year. A business man may be making money rapidly, and while he keeps the money invested pretty closely, his idea is to make, in the future, a substantial gift to a hospital in which he is particularly interested. He dies before he has accumulated an estate of a size which he thinks allows the setting aside of funds for this gift, and his heirs do not feel that it is incumbent upon them to carry out the plan.

In all these cases the value of the life insurance plan to the individual is perfectly obvious. In the first place, the gift can be made through relatively small annual contributions instead of necessitating a large outlay at one time. In the second place, the fact that premiums must be paid at a certain time supplies a stimulus to saving which ordinary savings plans do not have. Life insurance premiums usually have their place on the budget while deposits which can be made when it seems convenient are usually never made. The chief advantage of the life insurance plan, of course, is that death does not cut off the possibility that the gift will be made, but, rather, makes available the funds for the gift.

Most present-day life insurance policies provide not only that the proceeds may be paid in cash but may, if the insured prefers, be paid in instalments over a given number of years, or the proceeds may be left on deposit at interest with the life insurance company, the principal sum being held intact and paid at a specified time. These so-called "settlement options" often furnish a particularly convenient method of settling insurance taken out for bequest purposes, eliminating difficulties which might otherwise confront the executors in carrying out the wishes of the persons making the gifts.

AIDS TO BEQUESTS AND ENDOWMENTS

Co-operative effort on the part of life insurance companies and trust companies, in many instances, adds to the advantages of the life insurance bequest. In certain cases the trust company, with its discretionary powers, can carry out the wishes of the person contemplating a life insurance bequest more satisfactorily than could the life insurance company through its settlement options. The insurance may then be paid to the trust company as trustee under the terms of an agreement which provides for the distribution of the insurance proceeds according to the policyholder's wishes.

The advantages to educational and philanthropic institutions of bequests in the form of life insurance are numerous.

Much publicity was recently given to the shrinkage in the estate of H. C. Frick on account of high inheritance taxes, as a result of which various educational institutions received less than he intended they should have. The danger of shrinkage is avoided under the life insurance plan, however, for the proceeds of the insurance policy are paid in full to the institution named as beneficiary.

There is another great advantage in the fact that the bequest is paid promptly. Several years often elapse before the estate of a wealthy man can be settled and, in the meantime, funds which he intended for philanthropic purposes are not available. On the other hand, life insurance companies take considerable pride in the promptness with which claims are paid. About ninety-eight per cent of the claims of one large company are paid within twenty-four hours after proofs of death have been received.

The life insurance plan also helps to eliminate complications and possible legal difficulties. Suppose, for example, after providing for a specific charitable bequest a man leaves "all the rest, residue, and remainder" of his estate to his family. If the family are forced to liquidate valuable assets at a sacrifice to obtain the amount required for the bequest, or if the bequest takes a larger portion of the estate than the donor intended it should, it is easy to see how complications and ill feeling between the family and the institution may result.

The idea that life insurance furnishes a practical plan for meeting individual human needs is not, at the present time, so deeply rooted as it will be in the future, and the idea that life insurance may be of inestimable value in serving the needs of institutions has, in a sense, just begun to sprout. More may be said, therefore, about the possibilities of this plan of making bequests than of actual results. It stands to reason, however, that persons may be induced to give larger amounts if the sums they are to contribute represent only the equivalent of a relatively small rate of interest paid on the fund rather than a gift of the whole amount at one time. Also, many people who can afford only small yearly contributions can accumulate gifts of one or two thousand dollars in this way and it is often easier to obtain ten $1000 gifts from ten people than one $10,000 gift from one person.

While the possibilities of bequest insurance have not yet begun to be realized, the records of the various companies, even now, show hundreds of policies under which educational, philanthropic and religious institutions are named as beneficiaries and many institutions have already received gifts or bequests through the channel of life insurance.

The plan of increasing the endowment funds of colleges by means of insurance is becoming increasingly popular. In most cases, the members of college classes take out relatively small twenty-year endowment policies on their lives, payable to their Alma Mater at the end of the twenty years or at their death. The total amount of these policies represents a substantial contribution. For example, Princeton University, it is said, will receive over a million dollars from the endowment policies now in force on the lives of their Alumni.

Recently, during a drive to increase the endowment fund of the Children's Orthopedic Hospital in Seattle, $900,000 was subscribed through twenty-year endowment policies, and in about a year after the end of the drive the first $1000 was paid at the death of one of the subscribers.

In 1904, a number of priests in the Catholic Diocese of Newark, New Jersey, took out endowment policies to aid in financing the building of a new cathedral. At that time the ground had not been broken for the cathedral which has since been erected. The records of one company show that of the 108 policies taken in that company, twenty-five have matured by death, each having a value of $1300, resulting in a total of $32,500 paid into the cathedral fund. The remaining eighty-three policies matured at the end of their respective endowment periods and an additional $107,900 plus dividend accumulations was paid into the fund from this source.

The increasing demands upon educational and philanthropic institutions and the increased cost of administering these institutions present a serious problem to those responsible for raising the necessary funds. The president of one of this country's largest and most influential universities, in his 1926 report on the university's financial condition, said:

> On the surface, this statement appears to be satisfactory, but it must be repeated that this is only appearance, since in reality these results are reached by crippling and impeding the work of the University in many ways. There is a kind of economy which apes the most extreme form of extravagance, and that happens when those who carry on the intellectual and spiritual work of the world are denied the wherewithal to make their activity in the highest degree successful and effective.

If, as H. G. Wells states, "the underdevelopment of universities and educational machinery is like some underdevelopment of the brain and nerves, which hampers the whole growth of the social body," then the contribution which life insurance can make to education, if properly understood, can readily be appreciated. Moreover if, as Mr. Wells states further, "education is the preparation of the individual for an understanding and willing co-operation in the world's affairs," then the part which life insurance is playing at the present time in enabling individuals to obtain this education has no small significance.

FUTURE POSSIBILITIES

It does not require a great stretch of the imagination to see the need for much charitable work wiped out by an intelligent use of life insurance. A prominent banker of St. Louis made this remark some time ago:

> I believe if ten per cent of the amount spent by organized charities in St. Louis were used systematically for a period of ten years buying life insurance, thus aiding the poor they are now trying to relieve, the charity organizations would have much less work to do at the end of ten years, and thousands would be benefited and made happier on account of the insurance.

Needless to say, there is a long road to travel before the need for even a few philanthropic institutions will be wiped out by life insurance. This goal may never be reached. In any case, however, life insurance *can* aid in solving some of the most pressing problems which confront those responsible for the financing of philanthropic institutions and *will* aid if intelligently used and understood.

The Modern Life Underwriter

By JOHN MARSHALL HOLCOMBE, JR., LL.B.
Manager, Life Insurance Sales Research Bureau

IN the development and refinement of business activity in a young country, it is frequently observed that production problems claim attention before the allied questions of distribution are seriously considered.

Such a condition has clearly obtained in the United States, where the emphasis on production has resulted in remarkable improvement in mechanical and other operations. To a degree never before approached, we have already seen the production of goods and services steadily improved; and the field of this improvement covers as wide a scope as business itself embraces. We hear constantly, for example, that today a machine can do a volume of work which previously was done by five or ten workers—and furthermore that it can do the work better. More and better goods are the result.

The study and solution of these production problems have attracted the best inventive genius; and the resulting achievements have placed the United States in a position which she could not otherwise have occupied. In this effort to produce more and better goods, the idea necessarily grew that if goods were improved, their distribution would satisfactorily take care of itself. Many executives in all lines of business subscribed—often unconsciously—to this conclusion, and as a result their distribution policies and practices were left for secondary consideration. The president of a large corporation who said that his sales force was a great trial to him but apparently a necessary evil differed from many of his contemporaries only in his frankness.

Coming generations will undoubtedly regard the Great War as a dividing point between the customs and practices which were in use before 1914 and those which followed 1918. Such an attitude is already justly held by many men in regard to the problems of distribution. They recognize that many lines of business have spent time and money in studying these problems in the last eight years far beyond what was deemed advisable even five years before.

APPLYING SALES RESEARCH TO LIFE INSURANCE

Sales effort involves men and markets, in regard to both of which it is possible to secure vital information through what has come to be called sales research. Until very recent years, the word "research" was almost wholly connected, at least in popular conception, with laboratories, where chemical or similar experiments were carried on. Since 1918, many corporations, as well as governmental and private agencies, have applied the principles of research to many sales problems—to a study of the markets in which sales are to be made, as well as to a study of the men who are to do the selling. Territorial analysis and personnel studies are today commonly used to aid in better distribution.

In the field of life insurance, there has been a development similar to that which has just been described. The mathematicians and doctors brought life insurance to a position such that guess work in the acceptance or underwriting of risks has largely been superseded by facts secured through the application of scientific principles to many intricate problems. In this particular branch of life insurance activity, there has been developed through research a scientific foundation upon which the whole structure of the institution has been built.

But while that phase of the business was receiving attention, the sales or distribution end was being largely ignored so far as careful study was concerned. It was early recognized in the United States that a sales force was a necessity in the active solicitation of business. The taking of a life insurance policy is a peculiarly unselfish act, and the need of salesmen was considered necessary from the dawn of life insurance in the United States—about 1850.

The operation of the sales force has been developed through a system of local agency units, each of which is intended to be a distributing center through which the salesmen, usually called agents, are expected to operate. The managers of these local agencies are charged with the responsibility of securing agents to work for them, of training those men and of thus building a local sales force for the sale of life insurance in that community. These managers are of course responsible to their home offices, where the officers of the corporation are located and through whom the affairs of the company are in general directed.

Life insurance in the United States is now approximately seventy-five years old, and during most of that time—certainly fifty years—the operation of the sales organization was carried on with very little effort at making careful studies of the problems involved. Men were appointed as agents because they asked for the appointment. Territories were entered and offices established because some man told a company that he could sell a good volume of business there. It was widely believed that the problems which faced the sales department of a life insurance company were not susceptible to scientific analysis. For example, although the actuaries and doctors had studied human differences and their significance for the purpose of determining what members of the public could be accepted and what members must be rejected as risks and although they had accomplished much in that direction, the problem of selecting agents to sell life insurance was virtually ignored; partly because sales managers felt that there were no known principles to guide them and partly because they felt that they must accept most of the men who were willing to be appointed as agents. In the last ten years, the attitude has markedly changed; and many companies, as well as local managers, are today regarding the problem of selecting agents as one in which many men who apply should be rejected because they possess danger signals for the future. A study of the manner in which the selection process is now functioning shows that in some local agencies, a contract is made with only about one man out of every fifteen to eighteen of those whom the local manager interviews. Some of these prospective agents do not make a contract because they do not wish to do so, but many are rejected because the company or local agency does not wish them. Much water has gone over the dam since the days of even ten years ago, when it was widely and frequently correctly believed that after a man had failed at many other things, he turned to life insurance selling, secure in the idea that any life insurance company would be only too glad to give him a contract.

The business of life insurance has not yet passed beyond the early stages of careful study in its exceedingly intricate and numerous sales problems. But it is certainly safe to say that today the great majority of companies are keenly alive to the need for closer supervision of sales activities, accomplishing better results at decreased cost. Whereas, ten or fifteen years ago the sales or agency department was frequently without an executive officer in the home office at its head, today it is usual to find this department with a vice-president in charge of its affairs and with ample authority to operate his sales force effectively. From the executive at the head of the department to the newest agent in the field, a very great increase in the prestige surrounding the position which each man holds has been growingly apparent in the last decade.

THE APPEAL OF LIFE INSURANCE

At the same time that these developments in sales research have been taking place, the institution of life insurance has itself been expanding at a rate previously undreamed of. In the first year of the decade just being completed, that is, in 1917, there were issued new policies numbering 9,516,000 for a total amount of $4,891,037,000 of insurance. At the end of that year, the accumulated sales of all past years had resulted in a total of 50,345,300 policies which were then "in force" for an amount of $27,189,009,000 of insurance.

Ten years later—that is 1926—there were issued 20,913,000 policies for an amount of $16,383,000,000 insurance, and the policies "in force" were 108,429,000, for an amount of $79,950,000,000 of insurance.[1]

No such growth has ever previously been experienced in American life insurance. What factors brought it about? Obviously one condition of great importance was the growing prosperity of the country, but another factor of potency has been the recognition by the American public of the uses of life insurance. For example, the married man buys life insurance today for any one or more of the following purposes: to provide the necessities for his wife and family, to pay the mortgage on his home, to make possible the continuance of the grammar school, high school or college education of his children, to provide a lifelong income for the several members of his family, to provide an income for himself and family in case he becomes totally and permanently disabled.

A young unmarried man takes a policy for such purposes as to repay his parents for their expenditures on him, to start a savings fund and create an estate, to assure himself of an income in case he should become totally and permanently disabled, to protect an educational or other loan made to him.

Other purposes have appealed to wage-earning women, to women of means, to men of means, or those who wish to provide for some philanthropy, to corporations or partnerships which wish protection against the loss of some "key" man in their institution.

In short, the reason that approximately fifty per cent of our entire population have invested their funds in life insurance is because life insurance has a universality of appeal. It is uniquely useful to the day laborer and the millionaire because no other institution can do what it does.

It is safe to say that today most people believe in life insurance. But even so, the field for its use has barely been scratched, in the opinion of careful students, who point out the fact that the present amount of life insurance in force is equal to only about two and a half times the annual income of those who are insured. In other words, the average man who carries insurance at all carries only enough to provide for about two and a half years of his family's expenses.

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[1] The figures for 1926 were estimated from actual reports for ten months and estimates for the last two months.

The foregoing figures have been given for several purposes: first, to show the rapidity of the growth of the institution of life insurance; second, to show that despite this growth, the field for future expansion is so unlimited as to defy prophecy of what it may become in another decade; third, to lay the ground work for a consideration of the place of the underwriter or agent.

NEED OF INTELLIGENT SALES FORCE

It has already been indicated that American life insurance has regarded a sales force as a necessity. The attempts in England and the United States to operate without agents have shown that the growth of those companies was so limited as to make their experiment unattractive to other companies. This sales force has, of course, been instrumental in placing upon the lives of American citizens the volume of protection which now is carried by them. At the same time, it is proper to say that until very recently the sales forces of our companies were selected and trained in a manner which was not befitting the institution which they essayed to represent. It is easily within the memory of the present generation to recall signs in buildings which proclaimed—"Beggars, peddlers and life insurance agents not allowed." Small wonder that capable men shrank from entering such a classification.

The public has properly criticized the business because the business allowed men to represent it who should never have been given the privilege. Furthermore, the sales forces were sent out to discuss with the public a very technical matter—namely, how life insurance could fit the needs of the individual insurer—and they were sent out with wholly inadequate preparation for their task. It is because of these and other allied facts that the claim has been widely made that life insurance has succeeded despite rather than because of its sales methods; that the real reason it has progressed so amazingly well is because of its inherent and unassailable soundness as a public servant.

In the last decade, the American life insurance companies have made a vigorous effort to improve the quality of the men selected to represent them. They have endeavored to educate their local managers to select their new men instead of accepting anyone who presented himself, to recognize, among other things, that experience has proved that men who enter the business between the ages of twenty-five and thirty-five have shown on the average better results than those who entered it at either younger or older ages.

In the matter of training their salesmen, the advance which the companies have made in ten years has been entirely without equal in the history of the business. In 1916 there was little which the man entering the life insurance field could use to assist him in comprehending what his duties and opportunities were except the correspondence courses which a few companies had prepared for their own men and a book on life insurance which had been written the year before by Professor S. S. Huebner of the University of Pennsylvania. At that time, many new men were still being given a rate book, a few sample policies and nothing else except an expression of hope that they would succeed. Such a process developed some sterling men, but the vast majority fell by the wayside in discouraged hundreds and even thousands. Meanwhile the public was being interviewed by these untrained men and given many wholly erroneous ideas and unfortunate impressions. The amazing thing, as we look back over the more than half century of that kind of operation, is: first, that so many men were able to succeed as life insurance agents, and second, that the public was persuaded, during those years, in such great numbers that life insurance was a sound institution for them to patronize.

It has already been mentioned that one of the cardinal reasons for the growth of life insurance in the last decade has been the recognition of the uses to which it can be put. In effect, the underwriters of recent years have set themselves the task, not of selling a man simply a $10,000 policy, but rather of selling him a policy whose proceeds are needed by that particular individual for some particular purpose. Such a task means that a life insurance man is given the opportunity of advising his client how to buy life insurance—what needs can be covered by a policy of one kind and what by another—what is the best way which foresight can dictate for the payment of the proceeds. A man who can successfully render that kind of service to the public is in a very different position from the man who told everybody that they "needed a $10,000 policy." The institution of life insurance furnishes such an opportunity to every man who is ready to pay the price.

It has been aptly said that the life underwriter who prescribes for all his prospective clients the same sized policy is like a physician who would recommend to every patient the same kind and amount of pills. The significance of that statement lies in the fact that the reason the modern physician is able to differentiate between many kinds of treatment and prescribe intelligently for each individual patient is because of the years of training and study through which he passes before he is permitted to practice. The careful observer of modern life underwriting recognizes that in the past ten years the institution of life insurance has laid the groundwork to prepare its representatives for the task which has just been described.

MODERN LIFE UNDERWRITER

Slowly but surely are appearing men who are sufficiently well versed in life insurance and the needs which it can satisfy so that they are actually building estates for their clients which will show their usefulness only with the passage of years. These men are winning the confidence of an increasing circle of men because they are doing for those men what no one else is privileged to do. It is a slow process to produce such men, but the start has been auspiciously made.

The life underwriter who calls on the public today faces a very different task from his predecessor of a quarter century ago. He finds the idea rapidly spreading that the desirability of protecting life is being recognized as fully as essential as the protection of tangible property. In short it has been for years universally regarded as advisable to carry protection against fire or against marine disaster, but it is only in very recent years that a similar attitude has become widespread in regard to the protection of life.

Yet with all these opportunities, the modern life underwriter has no "primrose path." His undertaking is one wherein he has every temptation to procrastinate and in which he must show that rare capacity of being able to be his own master. It profits him nothing that he has taken a course in life insurance selling at one of the universities or that his services are vitally needed by the public, unless he is capable of withstanding the temptation to fritter away the hours which are given to him. Few, if any, occupations in the business world offer so many distracting influences as does selling; yet for the man who can become the master of himself, the rewards in life underwriting are many and great.

Never before have the companies on the American continent been so alive to the opportunity for better results in their distribution function; never before has the underwriter been so well prepared for his tasks; never before has the public understood life insurance as they do now; never before has a great university made its course in life insurance a requirement for graduation. It is in such an environment that the modern life underwriter is working.

The companies have shown certain marked tendencies recently: first, they are scrutinizing with increasing care the additions to their sales force; second, those who are retained are succeeding to a far greater extent than ever before; third, they are being selected with a genuine effort at a decision as to their acceptability; fourth, the training which is available is many times what it was even five years ago; fifth, intelligent supervision is rapidly taking the place of unguided and frequently misguided effort.

FUTURE PROSPECTS

These tendencies appear likely to accomplish certain results in the future: first, the institution of life insurance will be comprehended increasingly well by the insuring public because the men who carry the message to them, namely, the agents, will be increasingly capable of doing it; second, a constantly and rapidly improving group of men will be attracted to become underwriters both because of the appeal which the rendering of this type of service gives and also because of the financial reward; third, the attitude of institutions of learning will change as a result of these two factors so that training for the career of life underwriting will be available in an increasing number of institutions.

It seems no more than a reasonable expectation to say that the conditions surrounding life underwriting in 1927 give indications of the position which it will hold in the immediate future—from the point of view of the educator, of the public which is to be served, and of the life insurance companies themselves. Yet these indications can do no more than present the merest outline of the opportunity for striking improvement in distribution, principles and methods which life insurance offers. The reward for creative work in that field awaits the men who enter it with enthusiasm, ambition and brains.

Non-Medical Life Insurance

By Harold F. Larkin, A.A.S.
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A MEDICAL examination by a physician has customarily long been required of the applicant for a policy of life insurance as one of the important tests of his eligibility for the insurance. In fact, several states have in the past enacted legislation making a medical examination a condition precedent to the issue of insurance. The purpose of such statutes has undoubtedly been to protect the whole body of policyholders against the intrusion of unsound lives through careless methods of selection, and this requirement probably originated out of an effort to thwart the attempts of certain unscrupulous parties to profit by insuring so-called "graveyard" risks—a practice prevalent to some extent several decades ago. Even though the medical examination was thus firmly established in law and in practice, yet a modern development of the life insurance business has been to dispense with this test and safeguard, and to issue policies for moderate amounts without obtaining any medical examination, under the so-called non-medical plan.

The non-medical plan, introduced to American underwriting circles about six years ago, has found its development along two distinct lines. First, the acceptance of applicants for small amounts of insurance within certain age limits without any previous medical examination. Second, the acceptance of applications for additional insurance on lives previously medically examined and found insurable within one or two years prior. Under either method a medical examination may be called for if the conditions in the individual case render one apparently advisable.

The second method, initiated by certain American companies, can hardly be considered as strictly non-medical insurance since the insuring company relies to a large extent upon its previous medical findings, merely endeavoring to determine through the applicant's statements and other evidence whether there has been any known change in his condition of health in the interval. Some of the companies employing this plan have made it available only for a limited period, possibly one month, each year, and apparently have adopted it as a sales feature intended to increase their new business production among old policyholders. Since it lacks the essential features of the true non-medical plan, we shall henceforth consider the first method only.

Gradual Adoption in America

Certain Canadian companies were the pioneers on this continent in the adoption in 1921 of the true non-medical plan, although the industrial companies in the United States and Canada had been accepting insurance for small amounts (up to $500) without any medical examination, and abroad the plan had been well established in Great Britain for many years. The Canadian companies were influenced in part to adopt the plan because of the difficulty experienced in securing medical examinations in many parts of their territory owing to the lack of physicians, especially during the war period, which had resulted in holding up much new business. The rapid spread of the plan to embrace practically all of the Canadian companies was a development closely watched by American companies. About two years ago several of them adopted the plan and at the present time over fifty of the American companies now offer it.

The non-medical plan represents an attempt to select physically sound, healthy risks for life insurance without incurring for the applicant and the agent the trouble and possible delay and inconvenience, to say nothing of the expense to the company, involved in securing the usual medical examination. The non-medical plan does not mean any intentional lowering of the standards of eligibility or any desire to insure unhealthy lives or impaired risks at standard rates. It is aimed to select the business just as carefully as under the system of medical examinations but the selection is conducted along somewhat different lines.

In the selection of risks for life insurance there are ten factors to be considered in determining the insurability of an applicant, as follows, without attempting to name them in the order of their importance:

(1) Age
(2) Build
(3) Occupation
(4) Habitat or residence
(5) Amount and plan of insurance
(6) Habits
(7) Moral hazard or insurable interest
(8) Personal history
(9) Family history
(10) Physical condition

Information on these several factors may be obtained through different sources. Where the services of a doctor are secured to make a physical examination it has been customary at the same time to elicit through him facts on many of these various points, although such facts may be ascertained in other ways. The skill, expert knowledge and training of the physician are really required only to seek information on the last of these factors; viz., physical condition; although his training and experience particularly well qualify him to secure information on the last three. On others, properly drafted inquiries, explicit and clearly understandable, will elicit directly from the applicant himself much of the information that is vital. Personal and family history may thus be covered. Naturally, it is incumbent upon a company to see to it that the information sought from the applicant is thoroughly explained to him and clearly understood.

Therefore, the privilege of submitting applications on the non-medical basis is usually extended only to agents of experience and thorough training in soliciting life insurance, for under this plan the agent assumes certain of the functions of the medical examiner. Such an important trust reposed in the soliciting agent calls for careful selection of those granted the privilege and accordingly various tests of eligibility are established by the different companies, all designed to qualify only responsible agents who will safeguard the interests of their companies. Reliable agents recognize the added responsibilities and obligations imposed on them under this plan and have been found to respond satisfactorily to its demands. That conservative companies do feel justified in entrusting this privilege to agents is a clear indication of their confidence in the excellent character and calibre of their field organizations—a confidence which experience is demonstrating has not been misplaced—and true it is that in recent years the better companies have attracted to their agency ranks a well-educated, intelligent type of men and women of high moral and ethical standards. Conscientious agents of this type exercise care in selecting and recommending applicants for non-medical insurance and take pride in creating and maintaining a creditable record with their companies in this respect. They appreciate the advantages and benefits to them afforded by the non-medical system and recognize that careless work on their part may prove serious in its results to the company and even jeopardize their retaining the privilege of submitting business on the non-medical basis.

In selecting risks, companies wish to know that the applicant is financially sound, morally sound, physically sound and that there exist sound reasons for insuring his life. As for his being physically sound, what companies are really interested in knowing is that the applicant is in good health, able to work, has not been compelled to give up work on account of his health, has had no occasion to consult a physician because of any ailment, and knows of no existing impairment. This information the non-medical plan seeks to obtain with less effort and expenditure of time and money by making direct inquiry of the applicant without the requirement of a physical examination.

The application form employed is a searching questionnaire inquiring as to any illness, medical attention, operations, association with consumptives, any physical deformity or mental disorder, absence from work or change of residence or travel on account of health, etc., that the applicant may have experienced, so that the company obtains a fairly comprehensive survey of the applicant's past medical history and thus can determine its bearing on his insurability.

Supplementing these statements by the applicant, it is customary to require the soliciting agent to give his personal recommendation to the acceptance of the risk after indicating what acquaintance the agent has with the applicant and what knowledge he has of the applicant's personal history, physical condition, character, reputation and financial standing, or what investigation he has made of them. Then, in addition, the usual practice is for the company to secure a confidential detailed inspection report dealing with these aspects of the risk, quietly obtained without approaching agent or applicant, through competent unprejudiced independent informants in a position to supply the facts.

Supplied with the information furnished by the applicant's statements, the agent's recommendation, the independent inspection report, and such other information as may be known to it, the company can act on the case. A prompt disposition of a very large proportion of the applications is possible, while relatively few may be held for a full medical examination or other investigation before final action is taken. Any indication of possible physical impairment or weakness is sufficient justification for requiring a complete examination, and usually the examining physician is advised of the particular conditions existing which have necessitated the examination, so that he may pay especial attention to them in his examination. In adopting the non-medical plan companies are not seeking to eliminate the medical examiner. He has been too important a factor in the present-day development of life underwriting and in the establishment of the sound methods of selection now existing, to be eliminated. In fact, the medical examiner is indispensable to life insurance. He is the important factor in the granting of insurance to under-average or substandard lives,—a phase of the business which has already made much progress and is destined to still greater advances. The development of the non-medical plan represents no attempt to minimize the examiner's importance or to limit his functions.

On approved non-medical cases the general provisions of the policy contract issued are identical with those found in policies granted to medically examined lives. The clause relating to incontestability is unchanged. The same benefits relating to total and permanent disability and for double indemnity in case of accidental death are generally granted. One distinction exists in that, as a rule, term insurance is not issued non-medically, the usual requirement being that only Life or Endowment forms of policies will be granted to non-medical applicants.

Why should companies dispense with medical examinations? What factors have led to the adoption of the non-medical plan?

The trouble in securing examiners largely influenced the Canadian companies. American companies also find that in rural fields, especially, agents experience difficulty in arranging examinations promptly. Doctors, particularly younger men graduating in recent years, prefer to settle in sizeable towns where hospital facilities are available to them, where contact with fellow physicians is possible and where opportunities for specialized work in their profession are greater. In rural communities the lack of readily available doctors presents a real obstacle to be met by the agent canvassing for rural business, for it is often a real task to bring prospect and examiner together.

The material saving in time and worry to the agent is an important factor. The agent is relieved of the task of arranging for the prospect and examiner to meet and may complete the entire application at once when soliciting the prospect without the delay incident to securing an examination. It thus removes the opportunity for the prospect meanwhile to have a change of heart over the transaction and so results in more completed sales for the agent. Moreover, with the saving in his time thus effected on some of his cases properly utilized in soliciting other business, the agent will increase his production.

The non-medical plan results in distributing more widely the benefits of insurance protection and in encouraging and extending the thrift idea for which life insurance stands. More insurance may be placed through this plan and new lives protected that could not be reached before. Especially are many young lives introduced who become excellent prospects to build on for future business.

To the public, life insurance brings up the thought of a medical examination, which to some is, without any sound reason, a bug-a-boo. Though perfectly healthy, they have a hesitancy about submitting to an examination, and especially are many women prospects reluctant to undergo a physical examination.

The competitive aspect of the business has contributed to the expansion of the plan. After one or two companies have introduced the plan, others adopt it in order to offer the same facilities by equipping their sales forces with similar tools and affording them equal opportunities in the quest for business.

What results will follow if the medical examination is eliminated? Will not many impaired risks obtain insurance? Will not fraud be exercised? Is it not letting down the bars and paving the way for deception, poor risks and subsequent adverse mortality experience? That is a natural reaction of many life insurance men when they first learn of the proposition, accustomed, as they are, to view the medical examination as absolutely essential in the selection of risks.

What protection has a company if no medical examination is required? Mankind as a whole is honest and truthful. The applicant, unselfish enough to make the sacrifice involved in maintaining a small policy for his family, will rarely be of the type that would deliberately misrepresent the facts, for, as a matter of fact, the benefits he may gain by a falsehood are insufficient to be any real inducement. Where the maximum limit of insurance issued without an examination is small, the question of misrepresentation is largely eliminated.

A further safeguard lies in the fact that insurance is sold and not bought. While, theoretically, impaired lives might apply for and possibly obtain life insurance under the non-medical plan; yet, practically, the general public is not sufficiently interested to take the initiative to any extent. Seldom do applicants voluntarily seek life insurance. On the contrary, they must be induced to apply through the efforts of an active agency force. An individual who does take the initiative and seeks insurance on the non-medical basis will naturally be carefully scrutinized, as will one who has applied to several companies for non-medical insurance.

A well-educated and thoroughly trained field force is a protection to a company. Such men rarely offer the non-medical feature as an inducement to insure, realizing that to do so will restrict certain sales to the non-medical limit where an application for a larger amount could have been as readily obtained. It rests with the agent to select his prospects with care and then to exercise the utmost care in obtaining the applicant's replies. Agents should impress the applicant with the fact that the company is willing to dispense with the usual insurance requirement of a medical examination because of its confidence that the applicant will give it the facts. It has been found that by properly presenting the situation to the applicant, he is more accurate in answering the agent on non-medical business than in answering the doctor who examines him. Agents recognize that evidences of carelessness, inadequate investigation, failure to safeguard their company's interests, lack of recognition of their duty and obligation to their company may be noted and recorded at the home office and that a repetition of such offenses will result in withdrawal of the non-medical privilege from the offender or the termination of his agency connection.

Without a medical examination certain existing impairments of heart, lungs or kidneys may escape attention, if the applicant is ignorant of them, but this situation the companies have anticipated and feel can safely be handled. For the most part impairments of this nature will have manifested themselves at some time and will thus be known to the applicant, but if not, by the restriction of the age limit customarily to age forty-five, companies protect themselves since such hidden weaknesses develop only infrequently among younger persons. Over sixty-three per cent of one company's non-medical applicants were under age thirty. Even on medically examined business, underwriters know that the best examiners sometimes fail to detect an impairment of lungs or heart. Occasionally a risk somewhat physically impaired may be insured on the non-medical basis, but offsetting any increased mortality loss thus incurred is the saving in medical examiners' fees eliminated under the plan.

Some objectors to the non-medical plan have argued that it would result in many contested death-claims. In the experience of the Canadian companies covering a number of years that has not proven to be true and in fact the dire results prophesied for the plan by some at the outset have failed to ensue.

The actual mortality experienced by the Canadian companies on their non-medical business has proven satisfactory, for in fact the non-medical business has shown up quite as favorably as the experience on the medically examined business. Such brief experience as some of our American companies have had is likewise considered satisfactory.

That this new departure in underwriting procedure is a generally accepted development of the business is indicated by the rapidity with which it has been adopted by so many of our companies and the number endorsing it is constantly on the increase. Several of our states, responsive to changed conditions, have modified or repealed their statutory restrictions on the issue of insurance without a medical examination. The trend appears to point toward a wider extension of the plan as time goes on. While the non-medical plan may be considered as a strictly modern development, yet actually insurance without medical examination is not a new proposition. In the early days of insurance in this country, the medical examination of today was an unknown quantity. Stethoscopic examination of chest, chemical analysis of the urine and blood pressure readings, now deemed by many as of utmost importance in determining the insurability of an applicant, were not a requirement in those days. And yet millions of dollars of insurance were successfully written without the aid of the numerous medical requirements of today. Today many competent authorities are convinced that with intelligence and under proper precautions and reasonable safeguards it is entirely feasible, within certain limitations as to age and amount, to dispense with the medical examination in the case of many applicants with resultant advantages to the applicant, the agent and the company.

Salary Savings Insurance[1]

By Richard L. Place
Aetna Life Insurance Company

During the World War the United States Government devised and effected a unique plan of life insurance. This plan, known as "War Risk Insurance," afforded protection to the military and naval forces in amounts up to $10,000 on a term insurance basis. The administration of the plan centered on one essential feature: the deduction of the premiums monthly from the pay of the men insured. By means of this a tremendous volume of life insurance was placed in force and maintained. Probably in no other way could such a vast program have been installed and handled effectively. It was the first outstanding example of the idea which later was to be applied by life insurance companies in designing the Salary Savings plan.

Some of these companies had already had several years' experience in selling and administering Group Insurance on a contributory basis, whereby a portion of the premiums are deducted from the pay-envelopes of the employes. In one sense, therefore, the origin of Salary Savings may be traceable to an effort on the part of these companies to supplement the Group coverage with a plan which would offer the various forms of individual policy-contracts to employes on a similarly convenient monthly pay-roll deduction basis. On the whole, however, it was merely a logical development aimed at mass-selling, an effort to reach more readily, more comprehensively, and more economically the great mass of salaried workers and wage-earners who constitute, in large measure, the life insurance buying public.

Salary Savings Insurance came popularly into vogue at about the beginning of 1925, although at least one of the large companies had experimented with it for some time previous to that and had, in fact, already installed the plan on its own home office employes. We find numerous instances in the past where employers made arrangements to facilitate their employes obtaining more adequate life insurance protection, and many of these were not unlike the present Salary Savings plan in principle.[2] Our consideration of the subject will not attempt to deal with these pioneer phases, however, but will describe the plan and its development only from the date when it really assumed an identity and was offered, on a well-defined basis, by many of the leading life insurance companies.

Features of Salary Savings Plan

Technically speaking, there are no new features embodied in the plan. The same policy-contracts are offered and the same premium rates are used as on an individual basis. The chief difference is that the Salary Savings plan is usually arranged on a monthly basis, whereas most individual insurance is paid for annually. Some companies accept a lower minimum premium under the Salary Savings plan, in order to extend its benefits to greater numbers, although there seems to be some doubt as to whether this is actually justified when considered from the standpoint of the expense of acquiring and administering the business. We shall mention this point later in more detail.

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[1] Otherwise known as "Salary Allotment," "Salary Budget," "Salary Deduction," or "Pay-Roll Deduction" Insurance.

[2] John Wanamaker, for example, believed so firmly in encouraging his employes to obtain life insurance that at one time he presented each individual in his employ with a $1000 ordinary life policy, on which he had paid the first annual premium.

It so happened that "non-medical" insurance was inaugurated by many companies at about the same time the Salary Savings plan was brought forth. For a while, some companies offered the non-medical feature only in conjunction with Salary Savings. There is a wide divergence in the rules of the various companies in this respect. The majority offer the non-medical feature only on amounts of insurance of less than $5000. A few of the larger companies will accept up to $10,000, under certain conditions, provided the risk is approved at the home office. All companies necessarily reserve the right to request a complete medical examination in any case where there appears to be a reasonable doubt as to the applicant's insurability as a standard risk.

The non-medical feature no longer remains peculiar to the Salary Savings plan, however, and cannot be classed as an advantage pertaining to it alone. Practically all the companies writing non-medical insurance extend this feature similarly to individuals. We may say, therefore, that Salary Savings is nothing more nor less than life insurance in all its commonly known forms, and that the plan differs only in the method by which the premiums are collected.

This method of collecting the premiums by deducting them monthly from the pay-envelopes of the insured employes is, obviously, the essence of the plan. It is, in fact, so entirely the plan that one might be inclined to dismiss Salary Savings as being merely a soliciting scheme, aimed at having the employer act as a premium-collecting agency, were it not for some good reasons which can be advanced as to why the plan is capable of serving a very worthwhile purpose in industrial relationships. Let us review these briefly so that we may glimpse the more important aspects of Salary Savings Insurance and appreciate, to some extent, the purpose that the companies are endeavoring to accomplish with it.

WHY PLAN IS NEEDED

It is an undoubted fact that the great majority of wage-earners in this country are inadequately insured. This is indicated in a report of the Committee of the National Association of Manufacturers presented at their annual meeting, which contained the following:

> Approximately thirty per cent of American employes are not insured. Apart from the thirty per cent carrying no protection, there is conservatively estimated as many more who have less than $500 of insurance available at time of death, and the average of the remainder does not exceed $1000.

One of the reasons for this condition is that it has been very difficult for the companies to adequately reach this great class of potential prospects through the ordinary methods of solicitation. Most employers do not feel justified in allowing insurance salesmen to interview their employes during working hours, and the salesmen, on the other hand, cannot be expected to devote any considerable overtime to interviewing employes at their homes with the prospect of writing moderate-sized policies. The result is that the average employe does not have the opportunity to obtain the best life insurance advice.

Another and no less important reason is that employes do not have the opportunity to buy insurance on a convenient and economical basis. As previously stated, most individual policies are sold with premiums payable annually. This leads the employe to believe that he cannot afford the cost of an adequate amount of ordinary life insurance. A premium of $25 appears large to the man receiving a moderate wage, and many employes who enjoy a comfortable salary are unable to pay down $100 in a lump sum. The instalment payment methods used in merchandising other commodities are, no doubt, accountable in large measure for the evident fact that many workers nowadays are continually living up to the limit of their incomes from month to month, laying aside little or nothing in the form of a savings surplus. This thought was clearly expressed in a letter which appeared recently on the editorial page of the *New York Times*. The writer, in commenting on the instalment plan, stressed the need for diverting it to proper and productive channels as follows:—

> Critics of the instalment plan seem to overlook the fact that the fault does not lie in the plan, but rather in the direction it has taken There is no question that a great deal too much instalment buying has been diverted from savings accounts, life insurance and investments toward the purchase of non-essentials. The instalment plan is here to stay, and it is as well to recognize the fact and see what can be done under the circumstances. Probably the oldest form of instalment buying and still the best is life insurance, though very little of it as yet is on a monthly basis. Some investment brokers are selling bonds and stocks on instalments, but they have not very generally advertised the fact. Bankers have apparently done nothing to develop savings accounts by some scheme of regular monthly deposits of uniform amounts. There has been no general increase in the rate paid for savings in forty years at least, and an increase of one-half to one per cent yearly in special cases would not greatly increase the average rate paid, while it could be used as a great inducement to systematic savers.
>
> Concerted action by the insurance companies, investment brokers and bankers will save the situation, not by trying to stop or discourage a habit, but by diverting it to proper and productive channels.

This, literally, is the chief purpose of the Salary Savings plan. It endeavors to make it possible for a greater number of employes to buy life insurance, and thus practise thrift, by providing a means for them to set aside a nominal portion of their earnings each month, through the pay-roll deduction method, and save this money in the same way that they would meet their rent, electric light bill, and other fixed expenses. It is an effort toward making it just as convenient for them to save their money as it is for them to spend it, and it emphasizes the necessity for systematic thrift over a comparatively long period of time.

Obviously, the employer's co-operation must be secured if such a plan is to be applied successfully. The solicitation of the employes, advising them of the benefits to be obtained, and the administration of the plan, including the deduction of the premiums, depend entirely upon the employer's lending his whole-hearted assistance to the insurance company's representatives. This is logical, however, for if the plan can be shown to present advantages to the employes, with the view to bettering their condition, it will naturally concern the employer. If, too, it can be demonstrated that the successful operation of the plan will react to the benefit of the employer himself, then there is all the more justification for his adopting it and undertaking some slight expense in administering it.

Without attempting to go into a detailed explanation of all the sales-points which may be advanced in presenting the Salary Savings plan to an employer, let us outline briefly three factors which indicate a need among employers in general for a plan of this sort.

THE EMPLOYER'S PROBLEM

First of all, employers are faced with the problem of what to do when faithful employes, who have served them for years, outlive their economic usefulness. There undoubtedly exists a moral obligation to take care of such employes in some way, and yet employers are at a loss as to how to do so. The expense must be taken into consideration, and they may not feel that they can afford to retire the employes on reduced pay. Comparatively few employers have made provision for any sort of an adequate pension plan, and many of those in operation are on an unsound financial basis. The gravity of the situation is evidenced by the fact that legislation has been proposed in the state of New York to put pension systems under the insurance department and thus guarantee a sounder actuarial basis for them.

Secondly, employers are coming more and more to realize the importance of encouraging thrift among their employes. Numerous thrift plans of various descriptions have been inaugurated by employers during recent years. It appears to be generally accepted that if an employe can be induced to save regularly, his value and efficiency will be largely enhanced.

Lastly, there is the need for more adequate life insurance protection already mentioned—the problem of making some provision in event of the sickness, total disability, or death of an employe. The extent of this problem can be appreciated by studying the figures quoted, and by realizing the effect which this lack of protection must have on the mental attitudes of the uninsured workers. Worry, we know, contributes largely to inefficiency and unrest, and a sense of insecurity breeds fear and apprehension. How much will be gained by employers in relieving this situation is, of course, purely a matter of estimate. At least, however, they will be discharging a moral obligation, in taking steps to provide more adequate life insurance protection, and it is logical to suppose that in doing so a profitable investment in the confidence and good-will of their employes will result.

SOUND BUSINESS LOGIC

The Salary Savings plan is equipped to assist employers in their solution of these three problems. In extending its benefits to their employes they can make it possible for a greater number of them to obtain life insurance protection, they can encourage thrift on a convenient and systematic basis, and they can, through certain types of policies, provide guaranteed incomes which would be payable at the retirement age. For example, life insurance contracts known as "Insurance with Life Income at Sixty-five," "Pension Insurance," or "Endowment at Sixty-five" combine all three features and offer an opportunity for the employe to anticipate all contingencies by means of a simple, well-defined savings program.

If Salary Savings is here to stay, and if a wide development of the plan is to be anticipated, the employer's participation in the arrangement must be justified. He cannot be expected to adopt the plan, submitting to the expense of the employes being solicited and the premiums being deducted, unless he has reasonable assurance that it will operate to the advantage and benefit of his organization as a whole. Hence, we must assume that the reasoning in the foregoing paragraphs is true if we are to be in sympathy with the principle of Salary Savings, and if we are to believe that it is a matter of sound business logic for the employer to co-operate fully in installing and administering the plan. Fortunately, experience bears this out.

FAULTY SELLING METHODS

Mistakes have been made and difficulties have been encountered in the short space of time to date in which the companies have experimented with the plan. This is not unusual, however, for any new plan of insurance develops gradually and is subject to many refinements and developments before it approaches standardization. Often, and this has been no doubt true in the case of Salary Savings, the progress of the plan is retarded due to its being misunderstood, or not clearly grasped, by the salesmen whose province it is to explain it to employers and employes. Then, too, there is a tendency for the salesman to follow the lines of least resistance, which results in a failure to secure the proper co-operation from the employer.

Many of the criticisms of Salary Savings could better be directed at the faulty methods which many agents have used in selling the plan. For example, it has been a common practice to place it on a pure "solicitation" basis, side-stepping the real task of obtaining the employer's interest and backing, and seeking only his *permission* to interview the employes. Obviously, a procedure such as this serves only to rob the plan of its identity, and cannot be productive of good results. Unfortunately, however, the education of field representatives is a slow process, and many of them will probably continue to use such methods until they learn from sad experience that they are hindering, rather than helping, the advancement of the Salary Savings idea.

Also, some representatives have failed to follow the correct procedure in soliciting the employes. For example, the average group of employes may be divided into three general classifications: (1) executives and department heads, (2) foremen, clerical, and skilled employes, and (3) unskilled employes. The Salary Savings plan is properly applicable to the first two classifications. Experience indicates that it cannot be extended successfully to the third, or lower, classification.

One reason is that employes of this class are generally on a very moderate wage-scale and cannot afford to invest substantially. They have been educated along "industrial" insurance lines, and are accustomed to paying for their insurance in small weekly deposits. This, together with the fact that their employment is of a transient nature, makes it very difficult for their insurance to be handled effectively under the Salary Savings plan. It is much more advisable for this type of employe to continue purchasing his insurance on the industrial plan, and Salary Savings does not seek to compete for this class of business. Not only is the cost of administering a large number of small monthly premiums prohibitive, but there is the additional factor that a large per cent of the policies on these employes lapse when the employes terminate their employment. Only a company writing industrial insurance is in a position to follow through effectively and collect the premiums direct from the individuals.

It can be seen, therefore, that agents who have solicited Salary Savings on this basis have made a grave mistake. As a result of having concentrated their efforts on the rank and file of employes, they have secured a comparatively large number of small policies, involving minimum monthly premiums, which have been undesirable from the standpoint of permanence and administration expense.

The greatest need for Salary Savings exists among employes in the middle classification. Those in the first classification, the high-salaried executives and department heads, can conveniently arrange to invest their money and purchase their insurance on an annual basis. They have the opportunity to obtain expert life insurance advice, for they are actively solicited in the ordinary course of events. The skilled or clerical employe, however, welcomes the opportunity to save and pay for his life insurance on a basis more in keeping with his income, and there is no doubt that the Salary Savings plan brings these benefits more closely within his reach. The fact, too, that this type of employe is more responsible and more permanent in his employment makes it possible for his insurance to be handled efficiently and conveniently under the Salary Savings plan. Many executives, also, are found to be interested in availing themselves of the monthly premium-deduction facility. It is not always the man on a medium-sized salary who has difficulty in saving regularly.

TREND OF SALARY SAVINGS PLAN

In conclusion, therefore, we find that Salary Savings is designed to offer a convenient, accessible method for employes to save through the medium of life insurance. The operation of the plan can be considered to have a distinct bearing on industrial relationships, insofar as it assists employers in solving the problem of making more adequate provision for their employes, both as regards protection, thrift and pensions. Due to the transient nature of their employment, coupled with the factor of low wages, the plan cannot be as effectively applied to the unskilled class of employes. It is intended largely for the higher-grade, better paid, and more permanently employed classifications.

This, to our mind, is the trend of the Salary Savings plan. We look to developments aimed at the employer's participating in the arrangement more actively than heretofore. We anticipate the establishing of the plan on a much firmer foundation, embodying the provisions of a contributory pension plan on a legal-reserve life insurance basis. Several cases have already been written along these lines and the tendency points in this direction.

Many employers are spending large sums of money on thrift plans, pension plans, and other schemes intended to encourage their employes to save and provide for the future. It is, therefore, logical to suppose that the Salary Savings plan, which combines these features, together with life insurance, thus affording a complete savings and protection program, should be deserving of an equally substantial investment on the part of employers. Particularly, as it is undoubtedly true that the employer benefits in direct ratio to the extent of his participation in the operation of the plan.

The future of this development rests largely in the hands of the life insurance companies. They are faced with a splendid opportunity to extend their services in helping to solve the pension problem in industry and at the same time to assist in the encouragement of systematic thrift. It is reasonable to suppose that they will embrace this opportunity, improving and refining the Salary Savings plan and adapting it to meet the need that undoubtedly exists, and is becoming more agitated every day, for a plan of contributory pension insurance. It remains only for them to hasten the perfection of such a plan, and to so educate their field representatives that its benefits may be clearly presented to the employers of this country. In short, the task of "selling" the idea must rest on their shoulders, as in the early days of employer's liability insurance.

With the growth of the contributory pension plan we can expect to see the employer sharing substantially in the cost of the insurance. This contribution will probably be graded in accordance with the salary and term of service of the employe. Only those employes who have been employed for a certain minimum length of time will be eligible to participate in the plan. Medical examinations may be waived entirely, providing a sufficiently large percentage of the employes subscribe to it. It may even develop that an employe will be able to transfer his "pension bond" from one employer to another as he changes his employment, the second employer assuming the contributions to it where the first left off.

We are optimistic as to the future of Salary Savings for these reasons: (1) we believe the plan is fundamentally correct in principle; (2) there is a great need for more adequate life insurance protection, particularly among the class of employes who are not actively solicited; (3) there is a need for making it more convenient for this class of employes to save systematically; and (4) we foresee the development of Salary Savings to meet the demand for a financially sound, permanent, contributory pension plan in industry.

The tremendous significance of this development, and its wholesome effect on our industrial and social system, can only be imagined. Surely, it is an objective worth working for, and those who are in the life insurance business should look forward with keen anticipation to the day when, through the Salary Savings plan, the gospel of thrift and protection may be impressed with even greater force and effect upon the great mass of American employes.

Inspection Reports on Persons as a Factor in Life Insurance

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INSPECTION of persons is a means of getting confidential information from the community in which a person lives as to his desirability or undesirability as a risk in insurance. When insurance companies realized that the old system of requiring a report from the friend of the applicant was biased and often erroneous information, they adopted the method of getting confidential information from sources selected by the insurance companies. Insurers inaugurated inspection departments and the work was done secretly. The agent did not know of it; the medical examiner did not know of it; and of course the applicant did not know about it. Today the fact of inspection is known. The information and the sources of information are kept in strict confidence, the sources of information being known only to the inspector. Inspection is recognized as an invaluable aid in the selection and classification of risks.

Necessity for Selection of Risks

Some people argue that everybody and everything should be insurable at a price. Now and then somebody attacks life insurance as now conducted because those who need it most, due to defects, cannot buy it. They overlook the point that no price that is possible is high enough for bad risks. The price charged for the poorest risks should in fairness be high enough to pay a total loss plus the expense of getting the business and settling the loss. This would require a rate of over 100 per cent. Just as there are a few men who are certain to burn their property if they get fire insurance, and ships which face certain destruction if they put to sea, there are persons who as far as human knowledge goes, are certain to die within a few months, persons whose past habits have shortened their expectancy of life, and persons whose present mode of living is inviting early death. Some people live in such circumstances that temptation to defraud may prove irresistible, and others set out upon a plan to defraud. In all such cases an insurer faces a total loss in return for a small premium. In every way possible at reasonable cost the pertinent facts about those who offer themselves for insurance must be ascertained. Nowadays in nearly all cases the applicant for insurance is unknown to the insurer. The latter may be in Newark, New Jersey, the former in Pasadena; yet the insurance company must find out and eliminate impaired lives and risks of pronounced moral hazard. What is the machinery for doing this?

Means of Selecting Risks

In the first place an insurance company relies on its agents. They are given instructions as to the kinds of risks wanted. They may be told, for example, not to solicit people engaged in certain occupations, not to solicit people who belong to certain races (numerous American companies, probably the most of them, do not solicit the business of negroes), not to solicit women except according to certain restrictions, not to solicit persons with mental and bodily impairments, not to solicit persons who fail to maintain a specified standard of health and habits, and so on. The agent knows personally many of those whom he writes. He can find out most of the necessary information about any applicant. He can make as complete a certificate as his company requires. There are agents who will not knowingly offer their companies poor risks, who pride themselves on the small number of rejections they have, just as a judge boasts of few reversals. Companies may be proud of the attitude of their agents, but unfortunately some agents will try to get any kind of a risk insured. The agent may feel that it is his business to get the applications and somebody else's business to sift out the undesirable risks. However good the agent may be as a factor in selection, his work needs to be checked and supervised.

In the second place an insurer relies upon what the applicant says about himself. In addition to points pertaining to the kind of contract desired, the applicant answers questions as to his age, sex, occupation, amount of insurance already carried, and any previous times he has been refused insurance. The applicant is also called upon as a part of his application to make a series of declarations to the medical examiner. These statements concern age, sex, marital condition, race, residence, height, weight, occupation, health, habits and family history. Such an application becomes a part of the contract if the insurance is issued. Subject to the incontestability clause, legislation, and court decisions that statements of the insured must be material and may be considered as representations rather than warranties, misstatements may render the policy void.

In the third place the company relies upon the medical examination made by examiners who have been appointed by the company. The company seeks a pen picture of how the applicant appears to a trained medical man at the time of application. It is a universal requirement that no one other than the doctor and the applicant be present at such examination. Besides the medical questions, the doctor himself may be asked to answer such questions as:

> What knowledge have you of the habits, past and present, and general standing of the insured? Have you any reason to suspect unacknowledged over-indulgence in or free use of stimulants, or the use of narcotics, now, or in the past? Can you discover anything unfavorable in his manner of living, physical condition, personal or family history, not already mentioned? State anything discovered by you which may influence the character of the risk and which is not set forth fully above.

In the fourth place the company obtains an inspection report. This report is made by an investigator who gets in touch with informants to supplement and corroborate any knowledge he may already have.

HOW INSPECTION IS MADE

Inspection as an aid in the insurance of persons is said to have originated when a large eastern company sent out an investigator to check the accuracy and validity of a death claim. Later a department was organized to do this work. Today a number of the larger companies have their own inspection departments. Many companies have a few inspectors to do work on special cases. Most companies enter into a contract with an independent company or help support a bureau which makes a specialty of making inspection reports. An inspection company or an inspection department has chief inspectors, with staff and correspondents all over the territory covered. The requests for reports may be made by the companies. It saves time, as is customary in cities, for the agent who sells the insurance to mail a request for the inspection report direct to the local office or representative of the inspection bureau or company. The inspection is immediately made, but the report in every case is made only to the home office of the insurance company. Each request for a report is assigned to an investigator. Sufficient detail as to who the applicant is, his age, what he does, and exactly where he lives and works, must be given to make it certain that the right person will be reported on. This prevents a healthy person from being examined by the medical examiner as a fraudulent substitute for the real applicant who is not insurable. The investigator looks for information concerning habits, character, environment, social condition, occupation, and home and business life; these being recognized as important factors affecting how long a person lives. It is his task to find out who can best give the information desired. He must get it from several sources so as to have a corroboration of the facts obtained. He may talk with the employer or a business associate of the applicant; he may talk with an acquaintance or neighbor. Some reports are easy to obtain; some require great diligence and tact.

Inspection may and usually does slow down the work of issuing policies. At its best inspection requires mail time plus one or two days. Companies may go ahead and issue small policies without inspection. To save time they follow the practice of sending other policies ready for delivery to their agencies with instructions that they be held until the receipt of a telegraphic release which is sent after the inspection is learned to have been favorable.

THE CHARACTER OF THE INSPECTION

The report blank is in the form of a questionnaire. An examination of many blanks shows that usually thirty or more questions are asked.

1. The first group have to do with *the identity of the subject,* his age, and how long the informant has known him. They are like these:

> How long have you personally known the applicant? Or, about how long have your informants known him? How long since you or your informants have seen him or heard directly of him? (If not within two weeks, explain fully.) Is the above age about correct? (If not, try to learn the correct age.)

These questions are not only a check as to whether the right man was examined and reported on; they also have a bearing on the value of later answers as to the past life, etc., of the applicant.

2. There are inquiries as to *the nature of the subject's occupation.*

> What are his exact daily duties? Has he any occupation other than that given above? (If so, what, and how much of his time does he devote to it?) Are any of his duties dangerous, or unhealthful? (If so, what are they?) Do any of his duties require him to handle intoxicants, live wires, dynamos, or x-ray machines, to go underground, or to go up on high structural works?

Occupation is a vital part of the hazard. A difference may exist in the rate, amount or kind of insurance, or the risk may be unacceptable. Since such great improvements have been made in industry and living conditions, more occupations have become insurable. Wilford W. Mack says:[1]

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[1] *Weekly Underwriter,* Vol CXII, p 801, April 11, 1925.

As a matter of fact about the only people who are not accepted on any terms for ordinary life insurance to-day are aviators, civilian divers and submarine workers, jockeys, steeple jacks, those engaged in the recovery of arsenic, sand blasters, certain classes of glass workers, lead burners operating within inclosures, hide salters in the packing industry, and fur cutters in hat manufactories.

The list varies from company to company.

3. The next section of the report is in regard to *financial responsibility.*

Please make a liberal estimate of his net worth. About what would you estimate his gross annual income (including income from all sources)?

This information, if accurate, is especially important in connection with the amount of insurance desired. It is an indication of what can be paid for, and may be a clue to possible moral hazards. However, the experience of some companies is that such estimates are poor. One company has made a study of the reports on persons whose incomes were known to it. The estimates were so far wrong as to be considered almost valueless.

4. The fourth group of questions concern *appearance, health, past health, health of family, and exposure to communicable disease.*

Is his general appearance healthy? (If unhealthy, what seems to be the matter with him?) Do you learn of any past illness, bodily affliction, or injury that might affect the risk? (If so, what? When did it occur?) Has he any deformity, excess weight, or other peculiarity about his appearance? (If so, what?) Do you hear of applicant or any of his family having consumption, insanity, or any hereditary disease? (If so, who, and how long since?) Do you learn that he has occupied the same home with a person who had consumption or any contagious disease? (If so, how long since?)

Unfavorable answers to these questions that do not check with other reports result in further investigation. These questions strike toward the heart of insurability. The risk may be declined, or rated up, or insured with a lien against the policy, or limited in amount or kind.

5. The fifth series of inquiries concern *the extent to which the applicant uses liquor or drugs.*

Is he addicted to intoxicants or drugs—present or past? To what extent does he drink? (One, two, or three drinks a day, a week, a month, and what alcoholic intoxicant does he use? Answer as definitely as you can.) Does he ever get so intoxicated or drunk as to need assistance, or show other evidence that he has been drinking to excess? (Answer carefully.) About how many times a year does he drink to excess this way? Does this excess last for a few hours only, or for a day, or longer? About how long since the last occasion of this sort? Has he drunk to excess in the past? For how many years would you say he was drinking to excess? About how many times a year did he drink to excess? Did these excesses last only a few hours, or for a day, or longer? If reformed, how long? (Give number of years—one, three, five, etc.)

Does he use opium, cocaine, or similar drugs? (Give details.) Has he ever taken Keely or any other cure for excessive use of liquor or drugs? (If so, give date and place.)

In pre-Volstead days insurance companies would accept the risk of a moderate drinker. Today so much liquor is deadly poison that if a man drinks at all he is likely to be refused insurance. If a man has been reformed a long time and has no impairment he will be accepted.

6. The last questions are in regard to *the applicant's general reputation and any unusual hazards.*

Is his general reputation as to character and morals good? (If not good, give details in remarks.)

Do you learn of any heavy debts, domestic troubles, personal difficulties, feuds, aviation, automobile or motorcycle hazards, or anything else that might impair the desirability of the risk? (If so, state what.) Give a full statement concerning his business connections and working surroundings, also his social standing, associates, tendencies and home life. Amplify any incomplete or unfavorable answers given above.

As a life insurance risk do you regard him as desirable?

Insurance companies are vitally concerned with any feature that affects the moral hazard, the temptation to collect insurance to help one's family or the condition of one's estate, or to die to escape a bad situation. If the inspector says the applicant is an undesirable risk the company checks the facts carefully. Little attention is paid to an inspector's "yes." The company acts upon the basis of all its information.

Riders for special cases like hazardous occupations and more extended forms for applicants for large policies are used.

REPORTS CONCERNING WOMEN

The inquiries concerning women are varied to develop information concerning husbands and children. The effort is made to restrict the amount of insurance on a woman who is not in business herself to the financial loss her death would cause to her beneficiaries, and thus prevent speculation or moral hazard.

Will the premiums probably be paid out of her own resources? If not, who do you presume will pay them, and what relation is this person to her? Is she single, married, widowed or divorced? If divorced, give circumstances of separation. With whom does she make her home? Are the general moral surroundings of her home good? (If not good, give particulars.) Are there minor children or others dependent on her for support?(If so, how many, and who are they?) Give name of husband (if married), or father (if single). What is his occupation? About how much is he worth? About what do you estimate his gross annual income? Is his reputation, as to character, morals and habits, good? (If not good, what is the nature of the reports against him?) Do you learn of her using spirituous liquors, morphine, cocaine, or any stupefying drugs?

VALUE OF INSPECTION REPORTS

John J. King, Vice-President of the Hooper-Holmes Bureau, said in an address to the American Life Convention:[2]

> Many underwriters have stated that they regard the inspection report as having greater value in connection with the consideration of the risk than the medical examination. The president of one company recently told me that he prefers a *good* inspection report to a medical examination in most cases, but there is the rub. We know that all inspection reports are not good in the sense in which he uses the word, any more than are all medical examinations good. The quality of the average inspection report is probably as high as that of the average medical examination, in spite of the fact that the medical examiner has a profession which has required years of study to enter, while the inspector merely has a job and a poorly paid job at that.

The inspector of a regular case is a poorly paid man. Yet, if he knows what he wants and how to get it, he can report satisfactorily the views expressed by associates and acquaintances of the subject. On the other hand it would be easy to have an incompetent staff. Inquiries among insurance companies indicate that they attach great importance to the reports —how much, depends upon the value of the reports of the agents and examiners. If the agent's record is good and the medical examiner's record is good, as they usually are, a company to save time issues the very small policies on accepted risks without waiting for the inspection report. Then if the inspection should show something seriously wrong, it becomes the task of the company to take steps to cancel the policy. On policies classed as average they wait for the reports. On large policies companies call for special reports. While the regular reports cost the insurance companies one dollar each, special reports range in price from $2 to $10. Any person who applies for a large amount of insurance is certain to have his habits, associates and business scrutinized closely, and information sought to check that given in the medical examination and in the application blank.

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[2] *Weekly Underwriter*, Vol. CXII, p. 1229, June 6, 1925.

Practical harmony must exist between all sources of information. Closely connected with inspection is the work of keeping and exchanging information as to undesirable risks. Life insurance companies report applications that have been rejected to a medical impairment bureau which immediately sends a small card record of each case to each of its subscribers. The file of these cards is always consulted before any application for insurance is accepted. If a record exists it is compared with all the other data received and carefully considered.

W. C. Hill, Vice-President of the Retail Credit Company of Atlanta, said in an address:

> Inspection information of an unfavorable nature should be used with utmost care. It should be regarded primarily as a tip or indication of unfavorable conditions, rather than sufficient or final evidence of same. Confirmation through the previous action of some other company, through the agent or examining physician, or another inspector, should be secured before accepting same as sufficient for declining or postponing the risk.

Two cases will illustrate how this may be done. A saloonist had applied for life insurance. The inspector reported that he drank with his customers often, but not to excess. The company asked for another report for the saloonist claimed to be a teetotaler. The inspector then saw him drink with a customer, but decided to put it up to him personally. He said his job was to find out why he claimed to be a teetotaler when he drank with his customers. The saloonist very plausibly related how he catered to a class of workingmen who appreciated it if he were sociable with them, and who might resent his refusal to drink; that therefore he kept on hand a bottle of tea out of which he always served himself. To the inspector's quick "let me see it" and "let me taste it," the saloonist responded with genuine tea.

Another inspector turned in a thoroughly satisfactory report on a man. Information came back that six years before this man had been refused insurance on account of having had a very serious disease. The inspector found no one who knew of his having had that trouble. As a last resort he appealed to the applicant. He was told that the applicant had at that time agreed to buy insurance which he did not want; that to avoid taking it, he had mis-stated his health history, not knowing how serious such a record would be.[3]

Obtained by an outside agency or by an inside independent staff which has no interest directly or indirectly in the success of the applicant, the inspection report is supplementary to, and a check on, the accuracy of the statements of the applicant, and also on the quality of the reports of the agent and the medical examiner. It is just as true that these others are supplementary to, and a check on, the inspection report. It is idle to argue that it is more or less important than some other source of information. If inspection alone were used, it would be found necessary to discover some plan to supplement and supervise it. Inspection obtains a different sort of information. It may also show past illness or physical condition not disclosed to the examining physician. The fact of inspection may make the examiner more careful and act as a restraining influence on the agent.

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[3] The final decision of the insurance company as to this applicant was, "We don't want a liar on our books."

INSPECTION OF CLAIMS

Inspectors may be called upon to report as to the fact of death and the circumstances of death. As to the value of this work an inspection company says:[4]

> We do not recommend these death claim reports as a satisfactory means of clearing up claims that are in dispute, or as adequate for final decision in cases of suspected disappearance, substitution, doubtful identity, or other extreme situations which require detective or other skilled probing service. Our death claim reports provide a first screening process. The clean cases will go through and the doubtful ones will be held back for more mature and deliberate processes of inquiry.

Some companies do not feel the need of an inspection report on death claims. They get a report from the agent, and separate sworn statements from the attending physician, the undertaker, the claimant, and sometimes from a leading citizen. If there be no violence and nothing suspicious, the claim is paid. If there is doubt a prober is put to work on the case. The difficulty about this plan is that each report is likely to be friendly to the claimant; it may not uncover common suspicion.

The fact of death is easily proven. It is not so with claims for disability. There is often great doubt as to claims for temporary or permanent partial disability, to say nothing of the difficulties connected with total disability. Dishonest people make fraudulent claims and some honest people make unjust claims. The inspection report supplements other information. A negro woman put in a claim for total temporary disability. The inspector on the case dropped back two hours after his first interview and found her doing a family washing. A white man apparently totally disabled was visited by an inspector. The inspector had his suspicions aroused and returning after night found him playing games in the backyard. Insurance companies require additional reports just before the due date of premiums that have been waived on account of disability, and at least every three months in cases where a monthly income is being paid on account of total and permanent disability. If a report justifies it, a thorough medical examination of the beneficiary is made.

INSPECTION OF MEDICAL EXAMINERS AND AGENTS

Since, in the selection of risks, companies lean most heavily upon the reports of medical examiners, great care must be exercised in the appointment of a medical examiner. It is believed that to get the best results, the examiner must not be on too good terms with the agent. The doctor should feel that he owes his position, not to the agent, but to the company. In considering an appointment answers are sought to searching questions intended to show special qualifications for the work and to bring out any points of unfitness. Inspection reports can be used for this. Later on they can also be used to check any unfavorable indications. If, for example, the chief medical examiner observes that a doctor's reports are too much alike, as for instance too similar statements on blood pressure, something is wrong.

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[4] *Information about the Retail Credit Company*, p. 16.

Most insurance companies desire agents who are not only financially responsible and capable of producing the business wished, but also men whose lives are exemplary. An inspection report is used to supplement other information.

In a few cases actuaries have noticed that the early mortality rate was unusually high among individuals passed by certain agents and doctors. Inspection has resulted in the confirmation of the suspicion aroused and the elimination of agencies who were capitalizing the ease of selling insurance to the sickly.

WHERE INSPECTION IS THE CHIEF RELIANCE

In some forms of life insurance inspection furnishes most of the information upon which the company relies when it grants insurance. The things about which the insurer must have information are: (1) Plan and amount of insurance, (2) age, (3) height and weight, (4) residence, (5) occupation, (6) personal physical condition, (7) personal history, (8) family history, (9) habits, and (10) moral hazard. A competent reporter can furnish all of this information except number 6 and he can report the reputation which the applicant has with reference to that. If confidence is lacking in the competency of outside inspection, or it is believed that the volume of inspection justifies a lower cost, a company may organize its own staff of inspectors. This has already been done by some companies who are engaged in selling certain forms of insurance without medical examinations. It is seen from the above analysis that the acceptance of applicants without medical examinations is not so risky as many think, and especially if a large number of people are taken at once under conditions that prevent a pronounced selection against the insurer. In states where a medical examination is required by law it is the practice to resort to a short form of examination which is not so expensive as the regular form.

(a) *Group insurance.*—Group insurance is being sold in increasing amounts. No medical examination is required. The employes are taken as a group, provided all or a large per cent are covered, and the standards of employment and the conditions about the plant are satisfactory to the insurer. This is determined by the inspection made by the company. In group insurance sold by newspapers there is a chance for selection against the company unless careful individual inspection is used. Otherwise everything would hinge on the truthfulness of the applicant. Most persons who cannot say, "I am in sound health," do not apply for this newspaper-sold insurance. If one lies about his health, death within one or two years would permit the company to contest the claim. Some such persons do apply and the inspector learns from neighbors or associates of poor health or other poor conditions, so that the insurance is declined or canceled.

(b) *Additional insurance for policyholders.*—Some life companies will insure a present policyholder within a period, say two years, of his last successful application for insurance without another medical examination. The statements of the applicant plus the report of a competent inspection are considered sufficient. The company through its recent examination knows that there are no constitutional defects or chronic troubles of long standing. It takes a chance on some recent development. However, if inspection reveals something questionable, a medical examination is proposed.

(c) *Non-medical insurance for any applicant.*—Some companies sell insurance in amounts of $2000, or $2500, or less, without a medical examination, provided the applicant is not over forty-five. They may sell larger amounts under $10,000 after a short form of medical examination. There is no uniform rule. There are today many companies who accept applications without medical examination in amounts from $250 to $2500 with varying restrictions as to age and sex, the kind of policy, and the supplementary features as to disability and double indemnity. They may accept such applications from some agents and not from others.

Those who favor non-medical insurance argue that its advantages counterbalance any increased mortality. It is said that:[5]

(1) There is a larger percentage of completed sales.
(2) There is greater speed in issuing policies.
(3) There is a saving in medical fees.
(4) There is closer co-operation between the agents and the company. The agents have more power and responsibility.

On the other hand, it is believed that in large cities insurance without medical examination results in increased mortality and that the favorable experience of Canadian companies in Canada is due to the rural population. In the country or small town either the agent or inspector knows the applicant or can get exact information. In large cities conditions are more complicated. Industrial life insurance sold in small policies to any member of a family with no medical examination and no inspection besides that of the soliciting agent, shows a much higher mortality than ordinary life insurance, but for this there are more reasons than poorer selection. A great advantage of the medical examination is that it reveals impairments of the lungs, heart, kidneys and blood pressure that have never been found before. Many diseases are not feared before forty-five—the usual non-medical age limit—but tuberculosis is always a risk for adults. Great reliance must be put upon the agent when insurance is thus sold. A minute report is made by him. He acts as a check upon the competence of the inspection. Then the inspection furnishes a clue to whether the agent is putting the soft pedal on unfavorable information. In all cases the company reserves the right to require a medical examination. If the risks sold by an agent begin to show a bad loss ratio, the company will deprive him of the right to sell non-medical insurance. Inspection can also be used to determine whether a man is applying for the maximum amount allowed from several companies.

At present there is great difference of opinion as to non-medical insurance. As experience accumulates, a more certain stand will be possible.

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[5] *See* C. F. Cross, "Non-medical Life Insurance," *Weekly Underwriter*, Vol. CXII, p. 793, April 11, 1925.

Beneficiary Provisions Under Modern Life Insurance Policies

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According to figures taken from the *Insurance Year Book* for the year 1925, published by the Spectator Company, claims amounting to $1,246,000,000 were paid to policyholders during 1925. So much emphasis is placed upon the efforts of agents to sell new business and to keep in force the business already written that the fact is crowded into the background that all their activities are a means to one end, namely, that at the death of the persons insured, sums of money may be paid out to the beneficiaries. Looking at the business as a whole, the possibilities of the turnover of funds during a given year are tremendous. As the life insurance business grows, it becomes increasingly important upon what terms these great amounts are to be paid to the beneficiaries. Are they to be paid in lump sums to be spent or reinvested by them, or are they to remain in the hands of the insurance companies in the securities in which they are now invested, to be paid out gradually to beneficiaries, or held at interest? These matters are controlled by the insured's contract with the company, and especially by the beneficial provisions of that contract. These provisions are drafted according to the request of the policyholder or applicant for insurance, and that they should be properly drawn is a matter of primary importance to the beneficiaries.

Legal Background

Before entering upon a discussion of modern beneficial clauses, some consideration should be given to their legal background. They are to a certain extent based upon the experience which the companies have had in litigation arising under the older forms of policy contracts. An exhaustive study of that litigation would involve the reading of many opinions which show a striking lack of unanimity as to the interpretation to be put upon the various provisions. There are two theories which have played a prominent part in determining the rights of beneficiaries. One of these, the insurable interest theory, is designed to protect the insured against the beneficiary; the other, the vested interest theory, is designed to protect the beneficiary against the insured.

The courts decided that as a matter of public policy,[1] a person should not be allowed to take out insurance on the life of another unless the continuation of the life of the insured would be more to the advantage of such person than his early death. A detailed discussion of the theory and its application in specific cases is impossible here. A hasty outline of its development is all that can be attempted. Persons in the immediate family of the insured, and his creditors are considered to be interested in his continued life, and hence have an insurable interest in it. They may take out insurance upon it, having themselves named as beneficiaries, and paying the premiums thereon. There are many decisions in regard to the insurable interest of relations more or less remote, and of creditors to whom the insured owes but a small debt, some of which admit the insurable interest and some of which do not. If the court finds that there was no insurable interest at the inception of the contract, the contract will be considered as a wagering transaction and no recovery will be allowed the beneficiary.

It is generally conceded that a man has an insurable interest in his own life. If he applies for the policy himself and pays the premiums, he can name any beneficiary he chooses, unless he is a resident of a state which by statute requires that the beneficiary must in any case have an insurable interest. In order to avoid all questions on the point as far as possible, the insured is required to sign the application for his policy himself. But if the beneficiary was without insurable interest and paid the premiums, the mere fact that the insured signed the application would not be sufficient to validate the contract with the beneficiary.

Having gone thoroughly over the ground of the insurable interest of the individual beneficiary, the courts found themselves confronted with the problem of whether or not a business organization, corporation or partnership, should be said to have an insurable interest in the lives of its officers or members. They decided that it should, on the theory that the death of the officer or partner would mean a pecuniary loss to the business. If, however, the services of the insured could be readily replaced by those of another person, probably no insurable interest would be found. The employer has no insurable interest in the life of the average employe. The ownership of stock is not considered of such importance to the corporation as to give it an insurable interest in the lives of its stockholders, although it is probable that the stockholders would be held to have such an interest in the lives of corporate officers, since the success of the corporate enterprise is of considerable importance to the stockholder. The liberal attitude of the courts in cases involving business insurance has enabled the companies to enter this new field as they could not otherwise have done, to the mutual advantage of policyholders and companies. It may be of interest to note here that, in spite of the attitude of the courts, the Federal Comptroller of the Currency refuses to sanction insurance on the lives of important executives of national banks. Since the insurance of the lives of valuable officers is considered desirable in other lines of business endeavor, it is reasonable to assume that the regulation sooner or later will be altered.

The vested interest theory is peculiar to American law and was an early development which still persists. While the insurable interest theory makes it necessary for the insurance company to exercise care in the issuing of contracts to beneficiaries without a readily discernible interest in the continuation of the life of the insured, the vested interest theory makes caution necessary in the payment of claims upon the maturity of the policy. The older types of policies reserved to the insured no right to change the beneficiary. These policies were usually payable to the wife of the insured or in the event of her death to her children. The courts have held that such contracts create in the beneficiaries a right which can only be defeated by their consent, regardless of the fact that the insured may have paid all the premiums. Any attempts by the insured alone to change the benefit or dispose of the policy by assignment or will, must be disregarded, except in Canada and possibly one or two jurisdictions of the United States. This situation led and still leads to much dissatisfaction among policyholders. Changes in family circumstances may make a change in the beneficial arrangement of these policies desirable.

Such a change can only be accomplished by assignment by the various beneficiaries to the person to be substituted. If some of the beneficiaries are minors or have died leaving no estates and minor heirs, it is almost impossible to procure valid assignments.

As the insured in such cases is confronted with obstacles in making a change in payees during his lifetime, the insurance company is confronted with similar obstacles in attempting to settle the policy at his death. If the wife survives the insured it is a simple matter, but if she predeceases him, payment must be made to the children. Disputes have arisen over the rights of the heirs of deceased children to share in the insurance proceeds, and unfortunately there is no uniformity in court decisions on the question. It is often necessary to procure releases from many persons before the company is sufficiently protected in making a payment. Final settlement may for this reason be held up for months.

WHAT EXPERIENCE HAS TAUGHT

There are certain things that may be learned from experience with these older policies. One of them is that no contract should issue unless the beneficiary clause is complete and unambiguous. In spite of the increasing use of life insurance as a protection for business, the great majority of policies are still issued for the benefit of individuals dependent upon the insured, and at least ninety per cent of them are payable in a lump sum at his death. Most modern contracts contain a printed clause, either in the application or in the change of benefit provision, providing that the interest of deceased beneficiaries shall pass to those surviving, or if none survive, to the insured's executors, administrators or assigns. This provision does away with the necessity for making settlement with the estates of deceased payees. In the case of a policy payable in the manner described above, it means that if the wife predeceases the insured, only those children who survive him will share in the proceeds. Grandchildren will be cut out. This fact should be considered and if the insured wishes to include his grandchildren, the beneficial clause should be specially drafted. In every case the wife should be mentioned by name, but it is not necessary to designate children or grandchildren specifically. In fact it is perhaps undesirable to do so because of the possibility that others born after the issue of the contract who should share in the proceeds could not be included in the settlement. Such children could of course be taken care of by a new designation. Too often, however, insurance policies, like wills, are not kept up to date.

Another case in which the survivorship clause might not work out as intended by the insured is that in which he provides a fractional distribution to payees. Application is sometimes made for a policy payable to several persons, perhaps creditors, who are to receive fixed proportions of the proceeds. If one of these dies before the insured his share would be paid to the surviving payees equally. This would alter the fractional arrangement and perhaps give to the surviving payees more than was intended. The contingency could be covered by the inclusion of a clause providing that the share of a beneficiary predeceasing the insured should be paid, for example, to the insured's wife, if she survive him, or if not to his executors, administrators or assigns. The use of general terms such as "the insured's estate" or "legal representatives" in the reversion clause is to be avoided because of the uncertainty as to their exact meaning.

A second conclusion to be drawn from experience under the older policies is that if a policy is taken out for the protection of the family, the right to change the benefit should be reserved to the insured. The applicant for insurance is usually asked to indicate whether or not he wishes to reserve this right. If he does not reserve it and pays the premiums himself, he should provide for a reversion to his executors, administrators or assigns in order that he may have the power to dispose of the policy in the event that the beneficiary named predeceases him. Otherwise, he will find himself in the same position that many people are in who hold the older type of policy. On the other hand, if the beneficiary is to pay the premiums, it would be wiser not to reserve the right. In general, it may be said that the person who pays the premiums should control the reserve created by them, and the policy options, unless he intends to make an outright gift of the premiums paid.

LOCAL EXEMPTION STATUTES

There is one factor meriting attention, that sometimes influences applicants for insurance to forego the reservation of this right. That factor is the local exemption statute. In the early days of the life insurance business many states passed statutes providing that policies written for the benefit of the wife or children of the insured should be exempt from the claims of the insured's creditors. The Federal Bankruptcy Act of 1898 recognizes the exemptions allowed by local statutes. It also provides that powers which may be exercised by the bankrupt for his own benefit, as well as cash values payable to the insured bankrupt, pass to his trustee, providing, however, a period during which the insured may redeem the policy by paying the trustee the amount of the cash value. These provisions led to a doubt as to the effect of the older statutes which were not drafted with reference to policies reserving the right to change the beneficiary. It is apparent that the insured can exercise this right for his own benefit and that a change to "own" benefit would take the policy out of the class of those exempted by the statute.

Much litigation has arisen from the dilemma thus presented. The Federal courts have taken the position that unless the local statute clearly contemplates the exemption of such policies, it will not be sufficient to cover them. The state courts have taken a broader view of their own statutes and if the highest state court has interpreted the local statutes the Federal court is bound to follow its ruling. For this reason in some instances the Federal courts have been forced to retreat from the positions originally taken. Some states have remedied the difficulty by amending their statutes, as have Pennsylvania and Tennessee. In others, notably New York, the doubt persists. In states having no exemption statutes covering the wife's policies, the policies will pass to the trustee if the insured alone can demand the cash values under the terms of the contracts. If it is necessary that the beneficiary should join with him, they will not.

It sometimes happens that after a policy is issued the insured will wish to bring it under the statute and attempt to make the beneficiary's right absolute by waiving his right to make a change. The validity of the waiver of a valuable right without consideration is open to question. If the company which issued the policy will permit, it would be better in such a case to exchange the original policy for a new one containing no charge of benefit provision.

Whether or not the applicant or the

policyholder should be influenced by the possibility that his policies may be lost through bankruptcy depends upon the financial hazard involved in his business and the stability of his domestic affairs. If the family is broken up by divorce, the insured may be embarrassed if he cannot control the beneficial arrangement of his insurance. In the case of a policy on which the insured is to pay premiums, the reasons in favor of the reservation of the right are so much more forceful than those against it, that it is only in the exceptional case that the policy without it will prove entirely satisfactory. The exemption depends on the beneficiary clause only, and if the right to change is not to be provided, it is probably desirable that the insured should at least reserve to himself the right to cash and loan values.

QUESTION OF SURVIVORSHIP

Before leaving the general subject of beneficiary clauses calling for lump sum settlements with the dependents of the insured, there are at least two exceptional arrangements which should be mentioned. One of the interesting psychological developments of the modern policyholder is the fear that he and his beneficiary will be killed in the same automobile accident. Accidents in which several persons are killed are so frequent and occupy so conspicuous a place in our daily life that a person who is genuinely intent upon having his insurance proceeds go where he wishes to have them gives the possibility of the simultaneous deaths of himself and his wife serious consideration. It is perhaps a phase of the well-known anti-mother-in-law attitude. The insured puts the question, "If my wife survives me by a few hours, or a few days, who will get my insurance money, her family or mine?" Of course, if there are surviving children they would take the money as heirs of either or both estates; if there are none, the wife's next of kin would inherit it.

There is also the possibility that there will be no evidence as to whether the insured or beneficiary lived the longer. Contrary to the idea that many people have, the courts will make no presumption in the absence of evidence as to which survived the other. The majority rule seems to be that under the modern benefit clause carrying proceeds to "my wife, if she survive me, if not, to my executors, administrators or assigns," the burden of proof will be upon the wife's estate to show that she survived. If the burden cannot be sustained there will be a reversion to the estate of the insured.

Cases in which there is absolutely no evidence as to the survivorship are infrequent. Insurance companies are reluctant to make settlement in doubtful cases without releases from the executors or administrators of both estates because of the danger, if not the probability, that litigation would ensue. For this reason, a simple provision for a reversion to the insured's estate in the event of the simultaneous death of the insured and beneficiary is unsatisfactory. Insurance companies cannot afford to assume that all possible claimants will acquiesce in their decision that the deaths were in fact simultaneous.

To meet this situation and insure prompt payment of claims, various suggestions have been made. Frequently, the addition of some clause to the usual provision is suggested, such as the following; "but in the event that my wife shall perish with me in a common disaster, or shall not survive beyond midnight of the tenth day following the day of such disaster, to my executors, administrators or assigns." Such a clause might cover the case if there were no clear evidence of survivorship, or if the wife died within two or three days. If it became apparent that she could not live long, and yet she was still alive at the end of a week, it would be a close race between her brothers and sisters and those of the insured,—surely a sad position for the wife. Because circumstances might easily occur in which the wife might almost feel it a duty to cling to this life beyond or depart it before a certain point of time, such a provision is objectionable.

Perhaps the best way of covering the contingency is by a deferred settlement. Most companies would be willing to hold the proceeds at interest for a year, at the end of which the principal could be paid to the widow, if living, or, if not, to some other designated beneficiary. A longer period would be allowed for the wife's recovery with more certainty that the insured's plan for his beneficiaries would be carried out than under any simple benefit clause calling for a lump sum payment.

THE TRUSTEE AND MINOR

The second of these somewhat unusual arrangements is that calling for payment to an individual trustee for a minor beneficiary or beneficiaries. The clause may read "to Samuel Jones, in trust, however, for my daughter, Jane Smith." It is seldom, in the writer's experience, that these clauses are correctly drawn in the first instance. They will be defective in that they fail to provide for the possibility that the trustee or beneficiary may predecease the insured. There should be a provision that if the trustee does not survive, payment should be made to the beneficiary. If at the maturity of the policy the beneficiary is a minor or an incompetent, the insurance company would make payment to the legally appointed guardian or conservator rather than to the beneficiary direct. Probably if the nature of the naked trust created by such a clause were generally understood, the clause would not be requested. The trustee, in the absence of a definite oral understanding or written agreement with the insured, probably has no power to hold the fund after he collects it. His is what is legally known as a "passive or dry trust" and he would be bound to turn the fund over to the guardian or conservator if such were appointed by the court. The guardian's powers are much greater than those of such a trustee as he is expected to care for the minor's estate, paying such sums for his or her support as may be necessary during the period of minority. It would be quite as satisfactory in most cases, simply to name the beneficiary in the policy and allow the matter of guardianship to work itself out in the event of the insured's death during the beneficiary's minority. It would be possible under the laws of many states for the insured to solve the problem by the appointment of a testamentary guardian in his will. It would be well worth the while of the policyholder in such a case to consult his attorney in order to assure himself that his plans for his minor children will be carried out as he intends to have them.

It is oftentimes found desirable to enter into a more formal arrangement by which the proceeds will be held by the insurance company under a deferred settlement agreement or paid to a trust company subject to the terms of an agreement to be made between the trust company and the policyholder. Either of these plans would insure the protection of the beneficiary over a term of years. Trust companies and insurance companies are not competitors in this field, but co-operators. Since a very large portion of decedents' estates consists of life insurance, it is only natural that trust companies whose business it is to handle such estates should be interested in encouraging the taking out of life insurance. It is also to be expected that insurance companies should offer their investment facilities to policyholders who wish to avail themselves of them. The different plans of deferred settlements offered by life insurance companies are discussed in an article entitled "Income Policies" by Walter LeMar Talbot, in *The Annals* of the American Academy of Political and Social Science for March, 1917.

Although the deferred settlement has been adapted to many new uses since the publication of that article, the new features are rather concerned with the beneficiaries than with the plans of payments. It is now possible to get a great variety of beneficial arrangements, meeting the needs of beneficiaries from their college days to old age. Behind these settlements is the company's guarantee of an income of at least three per cent backed by the company's general assets. The strength and solidarity of the insurance company with its vast assets may seem a refuge to policyholders who have contended with the instability of banking conditions in certain parts of the country. The policyholder who is adequately insured can feel that the deferred settlement may provide for his beneficiaries a greater financial security than he has been able to assure them while living.

WAYS OF EXPEDITING SETTLEMENTS

In making a choice between the two forms of what might be called long-term protection, the foregoing points should be considered together with the insured's own circumstances which may make the service offered by one of the possible trustees seem better suited to his needs than that of the other. The deferred settlement, once it becomes effective at the maturity of the policy, is not flexible. The insured should bear in mind the fact that unforeseen emergencies may arise calling for the immediate expenditure of more money than could be realized by the beneficiary under the deferred settlement. If he expects to leave no assets that can be readily liquidated, he should arrange that at least one policy is payable in a lump sum to the beneficiary. If a trust company is to handle the trust, it may be given discretion to pay out portions of the principal in case of need. It may also be permitted to purchase with the fund investments from the insured's estate. This power might prove to be of great assistance to the executors. The facilities available to trust companies and their location at the place of residence of the insured and the beneficiaries make it possible for them to undertake a greater responsibility for the welfare of the beneficiaries than the insurance companies can assume.

THE "FUNDED TRUST"

There are two arrangements which an insured may make with trust companies in regard to the payment of premiums. He may pay the premiums out of his own funds. Or he may name the trust company as absolute beneficiary under the policies and place with it sufficient funds to meet the premiums under the policies as they fall due. This plan is known as the "funded trust." Even under a funded trust the insured may, if he wishes, reserve the power to remove policies from the trust or add new ones to those already included and to withdraw the fund provided for the payment of premiums. It has been suggested that the funded trust is particularly suitable for a man who holds a considerable number of securities paying a high rate of interest but having an attendant speculative risk. These securities may be placed with the trust company and withdrawn in case of need.

POLICY CONTRACTS

Any trust agreement entered with a trust company should be drafted only after a careful study of the policy contracts to be covered. If there are rights reserved to the insured in the contracts, the trust agreement should permit of his exercising them and should cover the point specifically. If, for example, the policy provides that the insured may borrow the reserve, the trust agreement should not provide expressly or by implication that he may not. A variation between the terms of the trust and the policy contract is likely to lead to friction with the insurance company. Just how far a policy naming a trustee as beneficiary is impressed with the trust has not been determined. Insurance companies, therefore, feel that to protect themselves they must respect the terms of the trust agreement and will not be parties to transactions with the insured which it does not permit. If the trust is to be irrevocable and the insured is to have no control of the policies, they should be assigned outright to the trust company.

WHERE SOUND JUDGMENT IS NEEDED

Both deferred settlements and agreements with trust companies may be made to contain clauses protecting the income from claims of creditors and restraining the beneficiaries from assigning their interests. There are many cases where such clauses are very desirable and there are undoubtedly many cases where such clauses will prove undesirable. Their use is a matter of sound judgment. They may be desirable if the principal beneficiary is the insured's wife, especially if she has had little or no business experience. If, however, the beneficiary is, for example, a son of the insured, a protected life income might prove to be positively harmful. The effect upon the character of the recipient of an assured income which cannot be reached by creditors is not always salutary. The English courts do not look with favor upon such clauses. The American courts, however, have taken a different position in regard to them, and their validity is generally recognized in the United States at this time. The American courts have not had to deal with the problems that confronted the early English courts and may have been taken off their guard by the spendthrift trust.

POLICIES AS SECURITIES

As an intermediate step between the protection of individuals and business insurance, the use of policies as security presents itself. Policies are commonly accepted by individuals and by banks as security for the insured's indebtedness, and an unsatisfactory form of security they often prove to be. They are unsatisfactory for two reasons. One of them is that the face of the policy, rather than its cash value, is frequently taken as determining the protection it affords. If we have recommended earlier in this paper that parties read the insurance contract, we recommend it even more strongly to the person who is intending to accept a policy as security. He should find out how much of a cash value the policy has. If it appears to be substantial, he should examine the loan provisions and determine by inquiry from the company, if necessary, whether there is an automatic premium loan request on file at the home office which has caused or may cause the policy reserve to be eaten up by premiums in the event that they are not paid by the insured. He should make sure that there is no beneficiary named whose release he has not obtained. If he contemplated having himself named as beneficiary under a policy to be issued, he should see to it that the policy does not reserve to the insured the right to change the benefit. If his designation as beneficiary is followed by the words "as his interest may appear," the insurance company making settlement at maturity will usually require proof of the amount of his claim and pay any balance to the contingent beneficiary. After he obtains title to the policy he should take care that the premiums are kept up or, if the insured is not in a position to pay the premium and he does not care to do so himself, he should surrender the policy at once, provided he is entitled to do so, before the cash value begins to run off.

A second source of difficulty for the assignee is the insufficiency of the form of assignment which he holds. It happens more often that a policy is assigned to a creditor than that he is named as beneficiary under the contract, and it often happens that he accepts an assignment carrying no power of sale. There has been a certain amount of confusion in the court decisions affecting assignments of life insurance policies to creditors. It is becoming apparent that if an insurance company makes settlement with a collateral assignee who holds no power of attorney or power of sale, without procuring a release of the insured's equity, it is quite possible that it will subsequently have to pay the face of the policy to the beneficiary. It will, therefore, usually insist upon obtaining the insured's signature before surrender. To protect himself properly, the assignee should procure authority to surrender the policy upon default in payments on the note without notice to the debtor. In any event, he would probably be held to be accountable to the debtor for any excess over the amount of the debt and accrued interest.

INSURANCE AS A BUSINESS PROTECTION

The last point to be discussed is the use of insurance as a business protection. Business insurance is so broad a subject that it merits a much fuller discussion than can be given here. There are many forms of agreements, a few of which we will outline. In general we may say that these agreements, like trust agreements, should be carefully drafted with reference to the provisions of the policies themselves. If new insurance is to be taken out, the whole arrangement should be planned before application is made. As we have already pointed out, the courts have been liberal in admitting the insurable interest of corporations in their officers. If the insurable interest exists at the inception of the contract, the corporation need feel no concern as to its validity if the officer leaves its employ.

The owners of close corporations often feel that the death of a stockholder will result in a lack of harmony in the management of corporate affairs and, in order to guard against disagreements and the resulting financial loss, will take out insurance payable to the corporation upon the lives of stockholders who are actively engaged in managing the corporate business. In states which permit a corporation to buy its own stock, an agreement may be entered into, among the stockholders and the corporation, specifying how the premiums shall be paid, what use shall be made of cash and loan value privileges under the insurance policies during the lifetimes of the persons insured, and stipulating that at maturity the corporation shall apply the proceeds to the purchase of the stock of the insured from his estate, the insured agreeing, for his legal representatives, to sell the stock to the corporation. The agreement should specify in detail the method by which the stock shall be valued and the disposition to be made of excess proceeds, if any, as well as the mode of making up the deficit in the event that the value of the stock is more than the amount of the proceeds.

An arrangement is sometimes made in which a trust company holds the stock certificates and the policies in escrow, the policies being made payable to the trust company, and manages the entire transaction at maturity of the policies. Such a plan is suitable for cases in which several stockholders and policies are involved and in which it is desired to prevent the stockholders from selling their shares to outside parties during their lifetimes.

In those states in which a corporation is not permitted to purchase its own stock, a plan may be used similar to that often employed by partnerships, under which policies will be issued on the life of one officer and principal stockholder, payable to the other or others, the parties agreeing that the proceeds shall be used for the purchase of stock from the insured's estate, by the surviving party or parties to the agreement.

The use of insurance for partnership purposes differs very little from its use in the protection of corporations. In a partnership the policy on the life of one partner may be made payable to the other, and the cash and loan value privileges vested in the partnership. The agreement between the partners should cover the sale of the deceased partner's share in the assets to the surviving partner and the use of cash and loan values by the partnership during the lives of the partners. Some provision is usually made for the taking over of the insurance by the individual partners in the event of the dissolution of the partnership, except by the death of one of the partners. In case of large partnerships the insurance may be made payable to the firm. The settlement of death claims requires special care in such cases, because of the fact that notice of the insured's death is at the same time notice of the dissolution of the partnership. Insurance companies find themselves beset with difficulties because partnership agreements are defective or non-existent. If the partnership agreements are carefully drawn to cover the principal benefits provided by the policy contract, namely, the death benefit and cash and loan value privileges, life insurance should prove to be a great help in the equitable settlement of partnership affairs upon the death of one of the partners.

DRAFTING BENEFICIARY CLAUSES

In conclusion, we can do no better than to emphasize the need for careful thought in drafting beneficiary clauses. This thought should be directed by a few general rules. These rules, by way of recapitulation, are that in disposing of policy options the rights of the person or corporation paying the premiums should receive primary consideration and protection in the contract to be issued. Since the law takes a special interest in protecting the beneficiary, the contracting parties must look out for the rights of the insured. In cases in which the policy is covered by a trust, partnership or corporation agreement, no contingency which might affect the policy should be left out. The right to exercise the options should be disposed of in the same manner as in the policy itself, with due regard to the possible effect of such disposition upon the rights of trustee and beneficiaries. The foregoing are simple rules, and if they could be followed there would be less dissatisfaction with policy contracts or friction between companies and policyholders and beneficiaries.

Unfortunately, unforeseen circumstances will arise in spite of the effort and forethought put into the preparation of documents. We can hope, however, that with the increasing understanding of the nature and uses of the life insurance policy, litigation arising from defective beneficial arrangements will become less and less frequent.

Fraternal Life Insurance

By Charles K. Knight, Ph.D.

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THE past decade has witnessed an actual decline in the total number of dollars of fraternal insurance in force in this country. Thus at the close of 1916 there was approximately $11,000,000,000 in force with the fraternal societies, whereas there is but approximately $10,300,000,000 on their books at the present time. When one considers the decline in the purchasing power of the monetary unit and the increase in population during this period, the significance of these figures is even greater than it is when one considers merely the sums themselves. Meanwhile, life insurance granted by the so-called old-line or legal-reserve companies has been increasing by leaps and bounds, the totals in force on the above-mentioned dates being $25,000,000,000 and $79,000,000,000, respectively. Furthermore, during the period from 1910 to 1920, the societies wrote about thirty-three per cent of the total amount of life insurance written in this country, whereas of late years they wrote but fifteen per cent of it. It is clear, therefore, that the decline in fraternal insurance has not been due to a lowering of the demand of the people of this country for life insurance, but to conditions within the fraternal system itself.

Fraternal insurance societies sell insurance for the protection of the insured person's dependents in event of his death. They also offer old-age insurance, health and accident insurance, and juvenile insurance. All of these forms except juvenile insurance have been offered for many years, the first fraternal benefit society having been formed in this country in 1868. Down to about fifteen years ago, the rates charged by most societies were inadequate to meet the benefits promised. As a result, many of such organizations passed out of existence, and others were forced to readjust their insurance to an adequate-rate basis.

This necessary readjustment has been a serious matter for most fraternal societies that have attempted it. The older method of accomplishing it was simply to pass a by-law requiring higher assessments, or the reduction of benefits. Such a procedure resulted in heavy withdrawals of healthy members, whereas the unhealthy ones remained with the society. More recently it has been learned that greater success attends the efforts at readjustment when expert salesmen are employed for the purpose of securing the consent of each member to the conversion of his certificate to the adequate-rate class. The conversion is made by issuing a preliminary term certificate at the member's attained age. The salesman receives a substantial proportion of the first twelve monthly premiums. Special "service" corporations have arisen to train salesmen for this work. By such a process, enough healthy lives can be transferred to offset the tendency toward adverse selection.[1] A society in the process of readjustment, however, finds it difficult to secure new members, as well as to hold all of its old ones. The immediate result of readjustment, or of an attempt at readjustment, has nearly always been a smaller membership as well as a smaller amount of insurance in force. Furthermore, the process tends to destroy the prestige of the society, particularly with those who do not understand the necessity of the higher rates.

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[1] *See* the author's *Advanced Life Insurance*, pp. 370–91. New York: John Wiley & Sons, 1926.

Failure on the part of some societies, then, and the necessity of readjustment on the part of others, has resulted in greatly weakening public confidence in the institution of fraternal insurance generally. Before the societies can hope to make much progress in the future, they must re-establish that confidence. In other words, fraternal insurance must be resold to the public.

It is a fairly safe prediction, however, that fraternal insurance on the old inadequate-rate plan can never again be sold in any considerable amounts to the American public. The public has learned that this plan, though furnishing cheap protection during a society's early years when most of its members are young, is unsatisfactory in the society's later years when the advancing age and death rate of its members render failure or readjustment inevitable. The beneficiaries, relatives and friends of those members who die early enough to have the face amounts of their certificates paid in full, are quite well satisfied with the inadequate-rate plan. A large majority of the members of such a society, however, live to the time when increased rates or a reduction of benefits is absolutely necessary. These members, together with their relatives and friends, are prone to voice their disappointment and disapproval of the plan. This disapproval has not been minimized by those interested in increasing the amount of sound protection. These are the chief reasons for believing that the public could not be induced to purchase any considerable amount of unsound protection.

ACTUARIAL SOLVENCY

The principal efforts of the fraternal societies during the past decade have centered around the question of adequate rates, or, stated differently, the question of actuarial solvency. A society, or indeed any other life insurance organization, is said to be actuarially solvent when it will be able to pay all of its promised benefits without increasing the rates of assessments or premiums paid by its members. A life insurance organization will be able to meet its claims without such an increase when it has funds which, together with the present value of assessments or premiums payable to it in the future, equal the present value of the benefits promised, all calculations being made on a conservative mortality and interest basis. The determination of the amount of these necessary funds is called valuation—the funds themselves, reserves, reserve funds, or funds to meet the reserve liability. Life insurance companies, speaking generally, are required by law to maintain funds to meet a reserve liability determined according to the American Experience Table of Mortality with interest at three and one-half per cent compounded annually. Companies may elect full-premium valuation, or some modification of it that will yield lower reserves than it would yield, such as the preliminary term method modified according to the Illinois standard, or some other standard.

For the societies, again speaking generally, the National Fraternal Congress Table of Mortality with interest at four per cent compounded annually has been established. This basis yields lower reserves than those required of commercial companies, but they are high enough for practical purposes.

Fraternal societies of sufficient size may use a mortality table constructed from their own experience. Recently there has been considerable discussion of a table described by Mr. Edward B. Fackler in a paper read to the Fraternal Actuarial Association in February, 1926.

Legislation compelling actuarial solvency on the part of fraternal benefit societies by setting up legal minimum standards of valuation has met with but varying success in this country. The so-called Mobile Bill, agreed upon in 1910 by a committee composed of state insurance commissioners and representatives of the National Fraternal Congress and the Associated Fraternities of America, was thought to be too severe when put in practice in a few instances. For it was substituted a bill drawn by a similar committee in 1912, and known as the New York Conference Bill. This bill, with modifications and additions, has been adopted as the fraternal insurance code of many states. The code, as it exists today in most states, allows a wide latitude to the societies in the way of actuarial solvency.

The situation at the present time is that some of the societies are on an actuarially solvent basis as regards all members, others place new members in the adequate-rate class, and still others are in need of further readjustment. A valuable aid to the person who is considering the advisability of entering a particular fraternal benefit society would consist in a frank and simple statement of the ratio of reserve funds held by it compared to those required to meet all of its claims. The Wisconsin Insurance Reports contain tables showing the important results of valuation in that state including the ratio of actual assets to required reserves, and the ratio of assets (actual and contingent) to liabilities (actual and contingent). A copy of the important tables appears in the August issue of *Best's Insurance News*, published by the Alfred M. Best Company of New York.

JUVENILE MEMBERSHIP

Aside from the struggle toward actuarial solvency, and aside from legislative matters, the fraternal benefit societies have been interested during the past decade in several other problems that have confronted them. In the first place, it was realized during this period that some measure should be taken to enable societies to accept children for membership, so that members need not have recourse to the so-called old-line or legal-reserve companies in order to insure all of the members of their families. Facilities for offering such protection have been provided by legislation in many states, and a number of societies have attempted to sell insurance on the lives of juveniles. Considerable success has attended their efforts, probably as much as $70,000,000 being now in force on approximately 800,000 lives. The mortality rate experienced thus far on juvenile risks has been very favorable. During a recent year the actual deaths were only forty-eight per cent of those expected, according to the Standard Industrial Table of Mortality, which is the table commonly used by commercial life companies for industrial insurance. The funds necessary for conducting the juvenile department of a society are segregated from its other funds.

Originally it was provided that only children of members could be insured in a society's juvenile department, but more recently the law has been amended in many states so that children of non-members as well as those of members may be insured. It is hoped by fraternalists that insurance on the lives of juveniles will result in training them to believe in, and to continue, this form of protection upon attaining the required age for entering the adult class, and that parents who are not members of a society will be attracted to the fraternal plan. There seems to be little doubt but that juvenile insurance can be written by the fraternal societies in sparsely settled regions where the weekly house-to-house visitation of the industrial agent would be impracticable. In such regions, however, the head of the household is likely to receive his income at irregular intervals, such as at the marketing of important crops, and would therefore be more likely to purchase annual premium insurance than to make regular weekly or monthly payments of either industrial premiums or fraternal assessments.

As pointed out by the writer in his *Advanced Life Insurance*, Chapter XX, fraternalists admit that the cost of mortality is not likely to differ much in one large group of well-selected lives from that in another and similar group. Some fraternalists maintain, however, that the economy of management resulting from the democratic form of government renders the overhead expenses of fraternal insurance less than that of commercial insurance; and that, as a result, the total cost to the fraternal certificate-holder is less than the cost to the old-line policyholder.

Overhead Expenses

As regards overhead expenses, it may be stated that during a recent year the societies belonging to the National Fraternal Congress of America spent almost 818 for each $1000 of new insurance written. The lapses were so numerous, however, that the net cost of new business to the societies was probably twice as great as this. Thus in that year the societies paid out over $11,000,000 for new business, and yet ended the year with over 200,000 fewer members and more than $200,000,000 less insurance than they had at its beginning. New business expenses, though preponderant, do not, of course, constitute all of the expenses over and above mortality costs.

Commercial vs. Fraternal Insurance

Taking up the question of cost to the insured person, it is difficult to make an accurate comparison of fraternal insurance with commercial policies. The current method of determining the average annual payment of the commercial policyholder is discussed quite fully in the author's book, *Advanced Life Insurance*, pp. 209–20. Local dues and payments made by fraternal certificate-holders for purposes other than insurance should be eliminated to arrive at the fraternalist's average annual payment.

In a paper read before a recent meeting of the National Fraternal Congress of America, Dr. George W. Hoglan[2] states that he made a comparison of the yearly cost, without local lodge dues, of ten representative fraternal societies operating on an adequate-rate basis, with the cost of ten representative old-line companies. He selected age thirty, and, though he did not state his method of determining the costs, it seems probable that he used the usual methods, and chose non-participating premium rates for policies without double indemnity or disability provisions. His conclusions were that the fraternal societies' average cost to those entering at age thirty was $20.81 per $1000 of insurance per year; whereas the companies' average cost to those entering them at that age was only $18.29, or $2.52 per $1000 per year less than the cost with the societies. He further pointed out that the lowest old-line rate was $3.62 lower than the average rate for the ten societies, without local lodge dues, and that if these dues were included in the cost to members, the average cost of the ten fraternal societies would exceed the cost of this old-line company by $6.62, or by nearly thirty-eight per cent.

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[2] *See* Proceedings, 1923, pp. 393 et seq.

REASON FOR INCREASED COST

In view of the fact that, until very recent years, fraternal insurance has been looked upon as much cheaper than old-line or commercial insurance, these figures are indeed startling. The increase in the cost of this form of protection has been brought about chiefly by the efforts of the societies to accomplish two objects. The first of these was the attainment of actuarial solvency by readjusting their business to an adequate-rate basis, and the second one was to resell the plan of fraternal insurance to the public.

It should be understood that cheap fraternal insurance on an inadequate-rate basis still exists, the most recent Wisconsin report showing a grand total ratio per cent of actual assets to required reserves of but 56.2 per cent for all societies operating in that state. Readjustment has been discussed previously in this article.

Reselling the fraternal insurance plan to the public has involved a large increase in the remuneration of fraternal deputies or special representatives who act as agents of a society in much the same manner as do the agents of a commercial company act for it. In former years, societies grew because of the efforts of members—old ones bringing in new ones. This method of increasing membership is no longer effective since so many old members lost enthusiasm for the plan when readjustments were necessary, and new business must now be secured in the same manner as that of commercial companies. When faced with this change in conditions, the societies found themselves without an organized sales force to do the work formerly done by members. So-called service companies have trained salesmen to help the societies, for a substantial commission, to resell the plan, especially on readjustment. Sales forces have now been developed by the societies and by these companies to such an extent that considerable fraternal insurance can be, and is being, sold, but after it is sold a second difficulty presents itself. Most of the members pay in but a small fee on joining a society. They are then supposed to be held in the society by the local secretary or collector, who is often given little or nothing for his work. The result is that from one-third to one-half of the new business written lapses within a year. It is thus seen that fraternal insurance has commercialized its field work to the extent that the cost of securing new business at least equals, and indeed it often exceeds, the cost of obtaining new business for the commercial companies. Yet to date the societies have been unable to obtain the same efficiency, economy, stability, and confidence that characterizes the business of the companies. In fact, the most progressive societies that are maintaining, or striving successfully towards, actuarial solvency, are repeating, in large measure, the early experience of the companies.

FRATERNAL BENEFITS

Another phase in the recent development of this business has to do with the provisions of the fraternal benefit certificate. In addition to juvenile insurance, one may now purchase insurance covering the whole of life, or only a term of it. Whole-life certificates may be purchased on either the level-premium or the step-rate-premium plan. In the case of whole-life insurance on the step-rate-premium plan, the premium becomes a level one after attaining some specified age such as sixty or sixty-five. If the insured person wishes to do so he may pay an extra premium, over and above the step-rates, during the step-rate period, the accumulation of extra premiums being used to reduce the level premium that begins late in life below what it otherwise would be. One may also purchase endowments of different durations, or limited-payment life insurance. In fact the life benefits promised in fraternal benefit certificates are quite similar to those guaranteed by the contracts of commercial companies. It is also not uncommon to provide an accident and sickness benefit in fraternal certificates.

It should be noted, however, that the fraternal benefit certificate is not a closed contract, but includes the by-laws of the society, and any amendments of them that may be made. Furthermore, the society is required by law to reserve the right to levy additional or increased assessments, and if these are not paid, it may reduce the amount of insurance. A commercial company cannot increase the premium rate on policies that have been issued beyond the gross rate stipulated in the contract.

IN SUMMARY

To summarize the principal occurrences in the field of fraternal life insurance during the past decade, which covers the time elapsing since the publication of the last volume of *The Annals* of the American Academy of Political and Social Science, devoted to insurance,[3] we may state that the fraternal system has made substantial progress toward placing its business upon sound and enduring plans. Assets have increased and a higher percentage of solvency than that prevailing a decade ago has been attained. As a whole, the societies have steadily advanced towards an adequate-rate basis. They have adopted more businesslike methods and plans for conducting most of their activities than those previously employed. In the matter of selling their insurance and keeping it in force, they have not yet succeeded in perfecting an organization that functions efficiently. The cost of securing new business has greatly increased until it now seems very high compared to former costs. In fact, this increase has been so great that we have numerous instances in which sound fraternal insurance costs the insured person more than does the sound commercial insurance issued by old-line or legal-reserve companies.

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[3] See *The Annals* for March, 1917, on "Modern Insurance Problems."

The Fire Prevention Work of Stock Fire Insurance Companies

By H. A. Smith

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SOME years ago it was realized by executives of the leading stock fire insurance companies of the country that, although the business profited because fire is an ever-present possibility in all walks of life, the incineration of material wealth was reaching proportions which threatened economic disaster. As a consequence they authorized The National Board of Fire Underwriters, which today represents two hundred and ten stock fire insurance corporations, and is supported by them, to formulate a campaign along engineering and educational lines that would result in safeguarding life and property to the fullest extent possible. Such a program was at once undertaken and it has developed steadily in scope and intensity with the years.

This campaign has not been based upon narrow self-interest but upon a recognition of the following principles: (1) That every person and every organization owes more to the common welfare than mere industry and obedience to the law; and (2), that those whose commercial activities result from the existence of any given condition, the effects of which are detrimental, cannot avoid the responsibility of seeking to limit its public menace.

This viewpoint developed after the National Board was organized in 1866 to save the business of fire underwriting from disruption due to the demoralization which followed the Civil War. At first it had undertaken to be the controlling factor in fixing both rates and commissions and thus started out to be a fire insurance trust; it was, in essence, the first great American trust, antedating by some twenty years the much-discussed period of combination in industry and finance. Early efforts were disastrous, however, and, in 1876, it was definitely decided to abandon the attempt to determine rates. About ten years later, all supervision over agents' commissions was relinquished.

Serving the Public

Thus the Board made its exit from the field of jurisdiction over such technical insurance matters, and since then has grown steadily as an institution of a purely service character, its work benefiting the public as well as the companies composing its membership.

The operations of the organization are under the supervision of an Executive Committee, of which the president is an ex-officio member, and to this body the following sub-committees report: Actuarial Bureau, Adjustments, Clauses and Forms, Construction of Buildings, Finance, Fire Prevention and Engineering Standards, Incendiarism and Arson, Laws, Membership, Public Relations, Statistics and Origin of Fires, and Uniform Accounting. The working force consists of a General Manager and office staff, and the special staffs of the following six committees: Actuarial Bureau, Construction of Buildings, Fire Prevention and Engineering Standards, Incendiarism and Arson, Laws, and Public Relations. With the exception of the Laws Committee, all of these departments are actively promoting fire prevention and fire protection. Operations are nation-wide; headquarters are in New York, but branch offices at Chicago and San Francisco supply territorial engineering, arson investigating and legal service.

CENTRALIZING FIRE LOSS RECORDS

The Actuarial Bureau is the center of fire loss statistics for the United States, and as far as is known has no counterpart in this country or elsewhere. It has a membership which includes "outside" companies as well as Board members and from all receives adjusters' loss reports which give the values destroyed, insurance payments, structural data and other information. For the past few years it has collected about one million reports annually, and since its inception has received approximately nine millions of these documents, which have had to be examined, classified and tabulated by causes and construction. On a large loss there are always a number of companies involved and from each must be obtained data necessary to complete the record. The reports are boiled down eventually to actual claims on the various risks involved and there are nowadays about four hundred thousand such claims each year.

The Bureau also operates a Loss Information Service which supplies confidential reports to members concerning persons who have acquired what might be called the "fire habit," such data being obviously of a preventive nature.

An instance illustrating how this service functions relates to an actress who toured the Pacific Coast cities a few years ago leaving a trail of fire in her wake. Almost every time she stopped at a hotel long enough to unpack her wardrobe, a fire would occur and seriously damage her personal belongings. She would immediately file a claim alleging that she had accidentally dropped a cigarette in her trunk, or had ignited gasoline while cleaning her clothes, or in some other way had fortuitously started a blaze. The evidence was always circumstantial but corroboration was supplied by the woman's mother, or her friends, so that it was difficult to shape up a watertight case for a jury. The adjusters who handled her claims, however, embodied their well-founded suspicions in their reports and these statements converged in the files of the Loss Information Service, where their significance at once became apparent.

Thwarting criminal endeavor of this nature is clearly in the interests of the public as well as of the insurers, since the person who "burns for profit" necessarily adds to the cost of idemnity which must be paid by honest policyholders. Besides this, the defrauding policyholder also endangers, and frequently damages, the possessions of the upright.

The Board's Committee on Construction of Buildings has been termed a clearing house for information upon fire-resistive construction and similar technical subjects, but it is more than that; it has acted as a source of inspiration and assistance in bettering structural methods in all classes of building and in all parts of the country; i co-operates with municipalities everywhere in formulating building codes and, by request, has submitted, gratis practical criticisms of hundreds of such laws.

The first edition of its Building Code was published about twenty-one years ago, and the work has since become recognized as the standard of fire safe construction, which means, also, construction that is slow to deteriorate

It has also circulated widely a booklet dealing with inexpensive methods for increasing the fire safety of dwelling houses by means of fire stops between floors, proper chimney construction and so on. This Committee has, in addition, organized the attack on the wooden shingle roof, which has been responsible for the spread of numerous conflagrations.

SAFEGUARDING CITIES

The work at present carried on by the Committee on Fire Prevention and Engineering Standards is the direct outcome of the Baltimore conflagration which occurred in 1904. On that occasion it was forcibly brought home to insurance engineers that the increasing congestion of values in the larger cities represented a menace both to the public and to the business of fire underwriting.

The crowding of population into the limited areas in itself creates a fire hazard, as was then recognized, and steps were taken to bring about an expert study of the situation, with a view to formulating systematic measures for fire protection and fire prevention. Following the Baltimore conflagration the Board appointed a Committee of Twenty for the purpose of investigating the conditions mentioned so as to determine what remedial measures should be instituted in Baltimore, but the fundamental importance of the work soon became so obvious that the Committee was made permanent.

It is worth noting that in 1905 the engineering experts comprising the Committee predicted, following their inspection of San Francisco, that the construction of the city and other factors were so unfavorable that a sweeping fire was an ever-present possibility. What followed in April of the next year is a matter of history.

Ever since that time, with the exception of the war period, the Committee has been engaged in making engineering surveys of American cities, and investigating numerous technical factors in fire prevention and protection, and perfecting ordinances covering hazardous industries. It is reasonable to say that its careful and constructive inquiry into the various phases of the conflagration hazard has been at the root of a large part of the improvement in municipal conditions as regards physical protective factors, fire department equipment and operation, water supply and other items which affect the fire situation.

The Committee's engineers usually operate in field parties of four consisting of an investigator trained in water works practice, another to report on the fire department, fire alarm system and other fire department auxiliaries, a structural man who checks up physical conditions in the mercantile and manufacturing districts, and a general assistant. These field corps visit cities by invitation only and carry on their activities without charge to the municipalities. In the case of cities of one hundred thousand population an inspection requires about four weeks, but in the larger centers the stay of the engineers may continue for several months.

The water supply, being of primary importance, is studied with respect to its source, reservoirs, pressure, size and arrangement of mains, spacing of hydrants and other essential matters. Fire department engines are taken out and carefully tested. The fire alarm system is also tested and studied, wind velocities are ascertained and all other factors contributing to the conflagration hazard are investigated in detail.

At the close of this thorough-going survey, which is in the nature of a fire hazard diagnosis, the engineers prepare an exhaustive report accompanied by maps and diagrams as well as suggestions for correcting every defect that has been noted. For this reason the reports are not simply critical but are also constructive.

Thus far about three hundred and seventy-five cities have been reported upon in detail (many several times) and furnished with valuable, expert surveys at the Board's expense. As indicative of the benefits accruing from these inspections there may be cited the case of Jackson, Michigan, where it was found that on one side of the main street the water supply was copious while on the other it was deficient. Inspection disclosed the fact that the low pressure on the one side was due to the gate valves being threaded differently from the others. The city water department had no record of this condition and for years the valves had been closed when they were thought to be open. The discovery of the true situation resulted in an ample supply of water from all the hydrants in that section.

SPECIAL STUDIES

The study of water supply, fire department operations, structural conditions and so forth, naturally resulted in the formulation of a "Standard Schedule for Grading Cities and Towns with Reference to Their Fire Defenses and Physical Conditions." The first step in the preparation of this schedule was the establishment of standards covering the items of leading importance. The classification of any given city is determined by the application of points of deficiency based upon the extent of variance from the standards, which were formulated after conditions in some five hundred cities had been minutely studied. The maximum number of deficiency marks amounts to five thousand and cities and towns are classified in grades running from one to ten, according to their standing. The application of this schedule has been highly beneficial in bringing about improved conditions.

It has been noted in this connection that some cities have a tendency to develop water supply while neglecting their fire departments, or vice versa. Such deviations are disclosed by the schedule, since it has standardized the relative importance of the various factors, and if one gear in the fire fighting machine lags behind the others a deficiency charge is made until it is brought up to the average.

Another activity carried on by this committee is the standardization of hydrants and hose threads, a task which has made steady progress during recent years. The dangers of nonstandardization have been demonstrated upon many occasions, notably during the great Baltimore conflagration when many of the fire engines sent from other cities to assist in extinguishing the fire were unable to connect with the Baltimore hydrants.

Under this Committee's supervision come, too, the salvage corps operated in a number of the larger cities, their protective work benefiting the insured and uninsured alike.

One of the earliest activities which the Board proposed to carry out at the time of its organization was the suppression of incendiarism and arson, and a fund of $100,000 was established by the member companies, so that the Board might offer rewards for the conviction of incendiaries. This plan remained in force until 1916 when a radical change was decided upon. Although the reward system had brought more than four hundred criminals to justice and doubtless acted as a deterrent in thousands of other cases, it was felt that the suppression of this despicable form of crime demanded more aggressive measures. Accordingly the work of the Committee was broadened so as to provide for a staff of investigators who have since been waging a continuous war upon the "firebug" in all parts of the country. The Committee has educated police officials and district attorneys in different communities in the proper conduct of arson cases, thereby increasing the number of convictions, and has also worked for the unification of arson laws in the different states.

The numerous and diverging laws in the various states that pertain to fire underwriting, result in the need for constant legal advice and the Board's Committee on Laws looks after this phase of company operation. It studies important matters of legislation which otherwise would have to be cared for by each company separately. It also keeps track of court decisions, taxation and other matters of a legal nature.

The Board's Committee on Public Relations was organized in 1916, largely to supplement the technical work of the other committees by means of educational activities in furtherance of fire prevention, fire protection and fire insurance. It interprets to the public the technical work of the various other committees in terms understandable by the layman and thus promotes their aims and the public relations of the business by an extensive use of printers' ink and other media at its disposal. The Committee publishes a monthly bulletin entitled "Safeguarding America Against Fire," as well as numerous booklets and circulars and a manual of fire prevention instruction for the schools of the United States. It also circulates educational motion pictures and supplies articles to publications of various kinds, including daily newspapers.

It should be mentioned, as a matter of record, that the Board during the Great War rendered an invaluable service to the government by donating the services of its engineers in the planning, erection and protection of cantonments, shipyards, hospital and supply bases and numerous other physical cogs of the war machine. It also organized an inspection service that resulted in the safeguarding of millions of bushels of wheat and other foodstuffs which were sorely needed at that time.

The Board, in addition, maintains the Underwriters' Laboratories, a unique scientific institution conducted for the purpose of laboratory tests upon articles, supplies and processes directly associated with fire hazard, fire prevention or fire fighting, all of which have a vital bearing upon public safety. In recent years it has also been testing devices for the prevention of accident and theft. It is operated for service and not for profit, the experiments being conducted at cost, and its thoroughness and integrity have made its labels as meaningful in its field as the mark of "Sterling" upon a piece of silverware.

The foregoing simply scratches the surface of the story of the service rendered by the stock fire insurance corporations through the National Board of Fire Underwriters, and, supplementing its activities, many of the companies maintain engineering staffs for the correction of hazards in the risks in which they are interested, the intent of such activity being the reduction of rates.

Clearly, fire prevention and fire insurance are closely allied, both because the underwriters are the prime movers in the national campaign of loss curtailment, and because the lessening of fire waste means the lowering of rates. In safeguarding industry and employment, fire prevention becomes a great force for the common welfare. Thus fire prevention assists the public's pocketbook besides enhancing its safety.

Use and Occupancy Insurance

By Willis O. Robb
Manager, New York Fire Insurance Exchange

What is called in the United States Use and Occupancy Insurance and is elsewhere in the world variously known as Profits Insurance, Consequential Damage Insurance, and Business Interruption Indemnity, is only about as old as the century, though the very first experiments in these directions date back thirty or forty years earlier. Of late there have appeared many tracts and pamphlets, articles and contributions in periodicals, experiments in policy forms and rules, and solutions of typical problems dealing with or involving this subject, or some of its branches. A bulletin issued in April, 1925, by the Insurance Society of New York listed nearly sixty titles dealing with the topic, and I judge that this is a mere selection from the whole body of the material in the society's files. Many of these articles are repetitions of each other, prepared for purely local reading or printing, and never intended for general publication. The program of an insurance society or association or the table of contents of an insurance journal in Liverpool, or New York, or Sydney, N. S. W., will almost always be found to have something on this subject. And until the time comes for the appearance of a standard treatise on Use and Occupancy, the searcher for information concerning it will find his task a tedious and confusing one. And that time is not yet. For the subject itself is being standardized but slowly, either in theory or in practice. At present much of the best work in this field is being done by adjusters and others examining into the detailed features presented by typical Use and Occupancy losses, and endeavoring to secure such improvements of policy form and interpretation as will promote equity by extending the scope and flexibility of this form of coverage. This feeling-out of the subject must precede any effective philosophizing about it.

Important Exclusions

Meantime, it will be worth while to examine the general outlines, the present development, and the apparent tendencies of this branch of insurance. And it will be necessary to begin with at least two important exclusions. In the first place, it is manifest that losses from interruption of business, as distinct from the destruction or damage of physical property, or the loss or injury of life or limb, may occur from many other causes than fire, some similar and others wholly dissimilar to that cause; and as is natural, such losses are being increasingly studied and provided for by various groups of underwriters, quite outside the fire insurance field. Explosion, earthquake, windstorm, hail, sprinkler leakage, collision, burglary, and the like, not to mention epidemics and miscellaneous catastrophies, may all entail consequential losses of the same general class as interruption of business, in addition to the direct physical and material damage they cause. But in this paper I am confining the use of the term Use and Occupancy Insurance to the coverage against interruption loss caused wholly by fire.

And in the second place, there are many other kinds of insurance against loss by fire that deal with losses as truly indirect or consequential or contingent—as truly non-physical, in other words—as what is commonly called a Use and Occupancy loss. Some of these differ widely from Use and Occupancy, while some are distinguished from it with difficulty, or merge insensibly into it, or have some features in common with it. Among these are Rents, Leasehold Interest, Improvements and Betterments, Profits, Excess Replacement Cost (due to municipal ordinances, etc.), Interruption of Refrigerating or Heating Service, and Garment Workers' Consequential Damage (depreciation caused by loss of some parts of the suits of a stock of clothing to the remaining value of the other parts, not affected by fire). Some of these, either by their names or from long and familiar usage among underwriters and the insuring public, are not likely to be confused with Use and Occupancy. Two or three may require to be "distinguished," as the courts would say. For instance, Rents and Rental Value are primarily the income from letting a property to be occupied by others, not the value to the owner for his own use. Leasehold Interest is the specific value of a building, either to occupy or sublet, over the reserved or stipulated rental payable to the owner—or, in other words, the profits on a lease. Profits Insurance, in a strict sense, is limited to the specific profit expected (and reasonably computable) on actual merchandise involved in a loss, and does not include the expected but indefinite profit from the future operation of a going business. The other four kinds of cover here listed take care of various kinds of loss to actual and material property which, though consequential in one or another sense, do not have to do with duration of unoccupancy or untenantability.

From this brief summary it will appear that either Use and Occupancy or Business Interruption Indemnity is a better term for the contract under consideration than Consequential Loss or Profits Insurance, since, of the latter terms, the first is much too general and the second is at once too narrow, as seeming to leave out fixed charges, and at the same time too general, as including profits on destroyed finished merchandise, which are a proper subject for what is specifically called Profits Insurance. Personally, I think Business Interruption Indemnity the best of the terms in use, though not strictly expressive.

Having thus excluded all causes except fire, and all kinds of consequential or indirect loss, even by fire, except those due to interruption of the activities of a going concern, it will be in order to consider, necessarily with great brevity,

(1) the elements or component parts of the Use and Occupancy coverage;
(2) the restrictions and limitations under which it may be granted;
(3) the method of computing the rate for such a contract; and
(4) the apparent tendencies of this branch of the insurance business.

(1) In general, the elements of a Use and Occupancy loss are, (a) the net profits on the business prevented by the fire, (b) the fixed charges and expenses that the insured must continue, or that a prudent man so situated would continue, during a total or partial suspension, and (c) what the English call "increased cost of working" but what in American forms is more narrowly described as "expenses incurred for the purpose of reducing the loss."

Restrictions and Limitations

(2) It is easy enough to understand, and to approve, the inclusion of these three component factors in the coverage of such a policy. But to get a "close-up' of the contract takes a little effort. For instance, some authorities allow, and some forbid, the omission of any one of these three subjects of insurance, and some even allow the policy to be limited to a named few of the fixed or standing charges and for a named limit of either time or amount. Again, it is customary to limit this fixed charge item by the words "to the extent only that such fixed charges and expenses would have been earned had no fire occurred"; and "the increased cost of working," or "expense incurred for the purpose of reducing the loss" by the words, "for not exceeding such time as shall be required, with the exercise of due diligence and despatch, to rebuild, repair or replace," etc. And the whole coverage, in the more ordinary non-coinsurance and per diem form of policy, is limited to the actual loss sustained, not exceeding 1/300 (or 1/365) of the policy amount, "due consideration being given to the experience of the business before the fire and the probable experience thereafter." No period during which this previous experience is to be collated is specified, nor is the continuance of the period of indemnification fixed, except by the fact that it would take a year to exhaust the insurance at the named per diem; and if a longer period of continued payment is desired it can be had by increasing the insurance and reducing the per diem fraction. This fraction, however, cannot be increased and thus a shorter period of total suspension liability than one year set up. The per diem liability in case of partial suspension is pro-rata of what it would be in case of total suspension. An additional premium is charged for extending the term of liability for interruption to cover the need of replacing raw stock and or stock in process beyond the time required for replacing building and machinery; but of course there is no liability for property loss on stock of any kind.

But there is another kind or method of limitation that is extremely important, and as to the use of which there is great diversity of view and practice. That has to do with the feature variously covered by pro-rata, coinsurance or average, and valuation clauses respectively. The form I have just summarized or culled from is the so-called per diem form, under which the liability for loss from interruption is limited to 1/300 or 1/365 of the amount of the policy, for each day of such interruption. A modification of this form substitutes a weekly for a per diem rate of pay, at 1/52 of the policy amount for each week of interruption; and this gives a little better indemnity to the insured, because it adjusts itself better to cases where considerable day-to-day, but a less considerable week-to-week, variation in the output or turnover is characteristic. In neither of these is any coinsurance or average feature present. But there is also a coinsurance form that leaves out the per diem or weekly measure of indemnity and makes the company liable for such portion of any interruption loss as its policy amount constitutes of the value of the annual use and occupancy. This is usually still more favorable to the insured, or perhaps more unfair to the company, because a fire coming at a time of "peak" business may exhaust a large proportion of the policy in a comparatively brief interruption. And finally, there is the straight "valued" form which pays a named sum per day (not a named fraction of the policy) for each day of total interruption, without requiring any showing as to the amount of the actual loss, and a pro-rata of that sum for each day of partial interruption.

METHOD OF COMPUTING RATES

(3) As to rating for Use and Occupancy insurance, that is a subject involved in confusion, if not in chaos. None of the English authorities that I have seen throw any light on the English practice, and in this country the less light thrown upon it the better. In general, the rate for the per diem non-coinsurance form for mercantile or non-manufacturing risks is based on a percentage of the eighty per cent coinsurance building rate, or of the average between that and the corresponding contents rate, according to the cover of the policy; an increase being charged for the weekly form and a greater increase for the coinsurance form. For manufacturing risks a special schedule has been evolved, though that also is based on building and or contents fire rates, with special charges and allowances for greater or less difficulty of replacement of domestic and imported machinery, etc.

APPARENT TENDENCIES IN USE & OCCUPANCY INSURANCE

(4) As to the tendencies in this field of insurance, the following appear to me to be visible:

(a) The demand for this insurance, and for its clearer demarcation from other forms of cover, will steadily grow and its importance in the insurance and the commercial world will increase.

(b) The effort to standardize forms, as is being done in the East under the direction of the Uniform Rules and Clauses Committee of the so-called Eastern Union, and in the West by the Western Actuarial Bureau, seems to me likely to break down. Already there are eight approved or standardized forms and two or more riders for each duly promulgated, with the valued policy in several forms apparently yet to come. The eight forms at present outstanding are entitled as follows:

Per Diem Form No. 1, for Manufacturing Plants in Steady Operation.

Per Diem Form No. 2, for Mercantile or Non-Manufacturing Risks in Steady Operation.

Weekly Form No. 3, for Mercantile or Non-Manufacturing Risks in Steady Operation.

Per Diem Form No. 4, for Manufacturing Plants Having Seasonal Operations or Fluctuating Earnings.

Per Diem Form No. 5, for Mercantile or Non-Manufacturing Risks Having Seasonal Operations or Fluctuating Earnings.

Weekly Form No. 6, for Mercantile or Non-Manufacturing Risks Having Seasonal Operations or Fluctuating Earnings.

Coinsurance Form No. 7, for Manufacturing Plants; Steady or Seasonal Operations, or Fluctuating Earnings.

Coinsurance Form No. 8, for Mercantile or Non-Manufacturing Risks, Steady or Seasonal Operation, or Fluctuating Earnings.

In addition, there are rider forms to cover stock in process, attachable to Forms Nos. 1 and 4, and special forms for Use and Occupancy policies covering lightning and electrical exemption clause, etc. And still the demand that each important risk be allowed to have its own policy form drawn to fit its own needs and circumstances is steadily growing. Practically, that is and has long been done in England. The popular demand for its introduction in this country will meet with strong resistance because of the need under the laws of most of the states to make like rates for like risks and covers, and of the difficulty of varying the Use and Occupancy rates of all imaginable varieties and limitations of cover. It may be that a common rate or method of rating can be established for all risks of the same general class of Use and Occupancy cover, regardless of minor differences. At any rate, I am inclined to think the standard Use and Occupancy forms must go, or be reduced to a limited use, or very generally modified, as need may be.

I hope and believe the good sense of underwriters, property owners, and state insurance department officials and legislators will drive out of use entirely the valued form of Use and Occupancy policy. It is theoretically unsound, violative of the great principle of strict indemnity, and productive of moral hazard. To be sure, it is easy to interpret, but that is its sole merit and that merit does not offset its general viciousness. Only the New England Mutuals use it extensively and with fairly satisfactory results, but the character of their membership is such as to reduce moral hazard features to a minimum, and this is a condition not to be duplicated in general business. The English underwriters, barring those inveterate gamblers, the Lloyds, have of late years tended more and more to abandon the use of all manner of valued policies.

UNSUITABILITY OF THE STANDARD FIRE POLICY

One rather fundamental difficulty about the Use and Occupancy problem in this country must be stated here. There is a very grave doubt whether the type of Standard Fire Policy, of which that prescribed by law in New York State is the best known, can be used as a basis for the insurance of Use and Occupancy at all. A former Superintendent of Insurance of the State of New York, the late Honorable William T. Emmett, stated that he was convinced that the Standard Fire Policy was not intended and could not legally be used for any of the typical forms of policy dealing with contingent or consequential losses, rather than direct property damages; as, for instance, Use and Occupancy, rents, profits, leasehold interest, etc. In practice, this opinion has never been followed or relied upon, but a good deal may be said in its favor. For example, to limit our inquiry to Use and Occupancy, it is to be noted that the Standard Fire Policy in good set terms seems to forbid the payment of the kind of loss which is the exclusive concern of Use and Occupancy Insurance. The Policy says that the (named company) "does insure" (the name of the insured) "against all direct loss and damage by fire . . . (for the named term) to the following described property located," etc.; "to the extent of the actual cash value . . . of the property at the time of loss or damage, . . . without compensation for loss resulting from interruption of business or manufacture." That would seem to exclude altogether the possibility of covering Use and Occupancy on such a statutory form of contract.

The practical conclusion reached, however, has been that this restriction merely forbids the inclusion in the computation of a direct property loss of any interruption loss as a part thereof, but without meaning to prohibit, and without effectually prohibiting, in fact, the specific assumption of loss from interruption as a major subject of insurance; so that it has been deemed safe to attach to the Standard Fire Policy blank special policy forms or a series of riders expressly devised for the assumption of Use and Occupancy liability, and to a considerable extent superseding the general provisions of the Standard Policy, intended for property insurance, with others more specifically applicable to insurance against interruption of business.

It is probable that there should also have been introduced a provision for the payment of Use and Occupancy losses by instalments where the extent of interruption may be identified by the insured's records, and perhaps also that a more particular method of handling appraisals or arbitrations and one more suitable to the nature of the loss, should likewise have been inserted. The English custom appears to be to issue business interruption policies on a form that is not in any respect a regular fire policy, and to make the adjustment depend almost exclusively upon the adjustment reports of chartered accountants who are called upon to examine the insured's records from time to time after the fire and until the full restoration of the regular volume of business has been attained, with a further provision that upon the successive reports of these accountants instalment payments of the loss will be made. Undoubtedly, it is a more clean-cut and satisfactory way of treating this kind of contract, but the difficulties in the way of having a considerable number of different standard forms of policy prepared for use in the different kinds of Consequential, Contingent, or Indirect Loss Insurance, have operated to prevent the adoption of the English model and practice in this country. Perhaps, however, it may be said that we are more English than the English in applying to this case the good old English practice of getting along with an old and unsuitable form of language rather than embark on the hazardous search for a new form which, though theoretically better, may develop unexpected practical disadvantages of its own.

The Regulation of Fire Insurance Rates

By Robert Riegel, Ph.D.

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I. Review of Fire Insurance Rate Legislation

In an article published in 1917[1] the author traced the development of state legislation for the regulation of fire insurance rates and made a survey of the existing laws. The chief purpose of this article was to describe the economic services rendered by fire underwriters' associations which are largely instrumental in ratemaking and to show the total lack of any comprehensive theory for the regulation of this large and specialized business. The history of judicial decisions demonstrated that the common law was inadequate as a method of regulation[2] and that anti-trust statutes, which were and are plentiful, had in numerous cases been held inapplicable to fire insurance.[3] A number of states, however, then had and still retain on the statute books "anti-compact" laws, which specifically forbade insurance companies from (to use a common phraseology) "forming any combination or agreement for the purpose of regulating or fixing the price or premium to be paid for insuring property against loss or damage by fire." Any doubt as to the efficacy of such laws was speedily resolved by decisions affirming the states' right to exercise this power.

It was evident in 1917 from the economic history of combination in the railroad and industrial fields that laws of the above types were inadequate in conception and effect and that, furthermore, they were illogical in principle when applied to the insurance business, the very essence of which is co-operation and not competition in prices. An effort was made to exhibit the contradictions and absurdities which were created by legislation often destined to lie unenforced on the statute books but sometimes brought forward in acrimonious disputes which merely served to temporarily deprive citizens of insurance protection.

There was gradually evolving at that time, however, a type of law which recognized or even specifically authorized co-operative effort in the making of rates, and it appeared questionable whether this or actual price fixing by the state itself would be the policy generally adopted. In Texas in 1910 a law had been passed which gave the state Insurance Commission power to fix, determine and promulgate the rates of premium to be charged and collected and to prescribe uniform policies and forms to be used.[4] Between then and 1917 there arose considerable agitation for similar laws in other states and it remained to be seen whether the example set in Texas would be followed elsewhere. After the lapse of ten years it is possible to answer this question and a recent abstract of state laws[5] enables a comparison between the status of legislation in 1917 and at the present date.

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[1] "Rate-making Organizations in Fire Insurance," *The Annals* of the American Academy of Political and Social Science, Vol. LXX, March, 1917.

[2] For references *see* the article in question and also Robert Riegel, "Fire Underwriters' Associations in the United States," Chronicle Co., N. Y., 1915, pp. 53–55.

[3] Because the anti-trust law ordinarily is applicable to "trade," "commerce," "dealings in commodities," etc., and insurance was held not to be included within the scope of such expressions. For citations of these cases *see* "Fire Underwriters' Associations in the United States," pp. 55–56.

[4] Statutes of Texas, 1920, Secs. 4876–4904.

II. OUTLINE OF EXISTING LEGISLATION

The following table shows approximately the legislative situation of the present and the past, with respect to fire insurance rating. The table prepared in 1917 for the article referred to has been brought down to 1926, by adding in *italics* the new laws emanating since 1917 and indicating the repeal of laws by brackets. It is difficult to convey a precise picture of such a broad subject, involving forty-six jurisdictions, in a table. This may be illustrated by one or two concrete instances. The statutes of a state may not contain any provision which in so many words prohibits discriminations in rates and yet may confer power on the insurance superintendent to revise unreasonable rates, which might seem to include the power to remove discriminations. Some states have on the books at the same time anti-trust statutes forbidding combinations to fix prices or even anti-compact laws forbidding insurance companies to combine to fix insurance rates and yet at the same time have statutes permitting the formation of rate-making bureaus or rating services. Presumably the latter are supposed to nullify the former. It is also difficult to ascertain what laws are repealed because they simply, as it were, disappear unnoticed while new laws are apt to attract attention.

In Column A are given both the anti-compact and anti-trust laws, the latter being indicated by (T). The former are laws which forbid combinations or agreements to fix rates of premium, mentioning insurance by name. The latter are laws forbidding combinations in restraint of trade, or commerce, to control the price of commodities or to prevent competition, insurance not being specifically mentioned. Column B[6] shows the states in which there is an act prohibiting discrimination in rates, not including so-called anti-rebate laws which prohibit agents from returning to purchasers of insurance any portion of their commission for writing the business. These laws are designed to prevent insurance companies from favoring individuals by writing insurance on risks of substantially the same hazard at different rates. Column C[7] shows the various state acts permitting agreements between companies relative to rates or the formation of rating bureaus or the employment of common rating agencies. Column D indicates the existence of acts which require companies to be members of a rating bureau and recognize such bureaus. Column E shows states in which the commissioner of insurance or other authority may make examination of rating bureaus or other methods of making rates. Column F contains the states having state rating laws. Column G enumerates the states in which the superintendent or other state authority has power to order revisions in rates, other than the mere removal of discriminations.

The table follows, but the average reader will probably prefer to examine the paragraphs succeeding the table, which summarize verbally the principal changes in legislation which have occurred.

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[5] C. W. Hobbs, "State Regulation of Insurance Rates," Proceedings of the Casualty Actuarial Society, Vol. XI, Part II, No. 24, pp. 218–275.

[6] The columns are placed in an order differing from the table in the earlier article.

[7] This column, unlike others, is not an exclusive classification, because it includes not only states which *permit* but those which *require* co-operative action.

A	B	C	D	E	F	G
Ala. (T)	*Ala.*	....	....	....	....	....
Aris.	Aris.	....	....	....	...	....
Ark.	Ark.[8]	Ark.	....	*Ark.*	....	*Ark.*
......	*Cal.*	....	...	....	....	....
Col. (T)	*Col.*	*Col.*	*Col.*	*Col.*	....	*Col.*
Conn. (T)	*Conn.*	....	....	...	...	....
Fla. (T)	*Fla.*	....	....	....	....	....
Ga.	Ga.	....	....	....	.	.
Idaho (T)	Idaho	Idaho	....	Idaho	(Idaho)	..
Ill. (T)	....	....	....	....	....	....
Ind. (T)	*Ind.*	*Ind.*	*Ind.*	*Ind.*	....	*Ind.*
Iowa	(Iowa)	....	(Iowa)	(Iowa)	....	(Iowa)
Kan.	Kan.	....	....	*Kan.*	...	*Kan.*
......	Ky.	Ky.	Ky.	Ky.	....	Ky.
La.	La.	...	....	...	....	...
Me. (T)	*Me.*	....	....	...	....	....
......	*Md.*	....	....	...	....	...
Mass. (T)	Mass.[9]	....	....	....	...	....
Mich.	Mich.	Mich.	....	Mich.	...	Mich.
Minn. (T)	Minn.	Minn.	Minn.	Minn.	....	Minn.
Miss.	*Miss.*	*Miss.*	*Miss.*	*Miss.*	....	*Miss.*
Mo.	Mo.	*Mo.*	....	Mo.	....	*Mo.*
Mont. (T)	Mont.	....	....	....	...	....
Neb.	*Neb.*	....	....	....	....	...
N. H. (T)	....	....	....	....	...	N. H.
N. J. (T)[10]	....	...	....	...	....	....
N. Mex. (T	*N. Mex.*	....	....	....	....	....
N. Y. (T)	N. Y.	*N. Y.*	....	*N. Y.*	....	N. Y.
N. C. (T)	N. C.	*N. C.*	....	N. C.	...	*N. C.*
N. D. (T)	*N. D.*	....	....	..	...	....
Ohio	*Ohio*	*Ohio*	*Ohio*	*Ohio*	....	....
Okla. (T)	Okla.	(Okla.)	....	Okla.	....	*Okla.*
Ore.	*Ore.*	*Ore.*	....	*Ore.*	....	....
...	Pa.	Pa.	....	Pa.	...	...
......	*R. I.*	....	..	....	....	....
S. C.	S. C.	*S. C.*	....	S. C.	....	S. C.
S. D.	*S. D.*	*S. D.*	....	*S. D.*	....	....
Tenn.	....	...	...	....	...	....
Tex.	Tex.	....	....	....	Tex.	...
Utah (T)	....	....	....	....	....	....
......	*Vt.*	*Vt.*	....	*Vt.*	....	*Vt.*
....	*Va.*	*Va.*	*Va.*	*Va.*	....	*Va.*
Wash.	Wash.	*Wash.*	....	Wash.	....	....
......	W. Va.	*W. Va.*	....	W. Va.	...	....
Wisc. (T)	*Wisc.*	*Wisc.*	*Wisc.*	*Wisc.*	....	*Wisc.*
......	*Wyo.*	*Wyo.*	*Wyo.*	*Wyo.*	....	*Wyo.*

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[8] Law requires all rates made under the same schedule to be uniform.

[9] A board constituted to hear cases and make recommendations—enforcement depends on public opinion.

[10] The courts have held combinations of insurance companies illegal.

III. ANTI-TRUST AND ANTI-COMPACT LAWS

In the ten-year period from 1917 to 1926 very little change has taken place in that group of laws designated as anti-trust or anti-compact laws, as may be seen from Column A in the accompanying table.[11] The only addition to the 1917 list of such statutes is Ohio, which provides that any member of a combination to control rates or commissions to agents is subject to revocation of its license, although agents may be co-operatively employed to examine buildings, suggest protective and preventive measures and to estimate the relative hazard of risks. On the other hand there has been no diminution in the number of such laws, there being at present twenty anti-trust statues which do not specifically mention insurance and sixteen anti-compact statutes, which name insurance as included. In fifteen instances the state apparently gives with the left hand what it takes away with the right, displaying the apparent anomaly of anti-trust or anti-compact laws forbidding combinations and at the same time statutes which permit or require insurance companies to be members of a rating bureau. Whether it was intended that the latter statutes should remove insurance companies from the penalties of the former statutes or not is mere conjecture.

IV. STATE RATING LAWS

The only law which now exists vesting authority in the state to originally make the rates at which insurance may be written is that of Texas,[12] conferring the power upon an Insurance Commission composed of the Commissioner of Insurance and two members appointed by the Governor. This body has the power to fix and promulgate the rates to be used by all companies, with the proviso that such rates must be reasonable and that thirty days' notice of changes must be given. Where risks are not rated by the state they may be written by the companies at their own rates. The policies and forms used may be prescribed by the Commission and the companies must file a report of the rate charged on each risk written. No state has followed the example of Texas since 1917 and the law of Idaho, which was of substantially similar intent, has been repealed. It is evident that the state rating law is not generally considered a satisfactory remedy for the evils in fire insurance rating.

V. LAWS AGAINST DISCRIMINATION

If state rating does not meet with approval on the one hand and free competition is not enforced on the other, the only middle ground is regulated co-operation. Thus state laws were passed which prohibited discrimination (1) between risks of the same class or (2) between risks of similar hazard or (3) in the application of schedules of charges and credits. These statutes ordinarily give the insurance commissioner power to order the discriminations removed. In Massachusetts a board is constituted to hear cases and make recommendations and public opinion is relied upon to enforce the conclusions. Such laws have become increasingly general in the past ten years, nineteen states having added them to the statute books. Their necessity appears to become recognized in inverse proportion to their usefulness, for under previous conditions of unrestrained competition they were very valuable and the evils of unrestrained competition in rates have now been considerably reduced. In other words such laws are now harmless but seldom required.

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[11] *See* table on p. 116.

[12] Statutes of Texas, 1920, Secs. 4876–4904.

VI. RATE REGULATION LAWS

The laws prohibiting discrimination, however, naturally led to an extension of state regulation. In order to effectively prevent discrimination it is necessary to regulate the classification of risks by requiring that methods of making rates, schedules, etc., be filed; to make public the knowledge of the rates which apply to all risks by requiring the filing of rates; to provide for investigation of discrimination in the form of hearings by insurance commissioners or boards and to give state authorities power to enforce removal of discriminations. Such statutes naturally divide themselves into three groups with reference to their severity

A. *Revision of Rates by State Officials.*—The first group includes those states which empower the superintendent of insurance or board to compel the revision of rates filed by insurance companies, without stipulating any recognized method of originally arriving at the rates except to prohibit discrimination. Thus the companies may purchase their rates from an "independent" rater, agents and brokers may form associations for the purpose of co-operatively making rates or companies may establish rating bureaus. This form of regulation originated in New Hampshire in 1899, and had tended to disappear by 1917, only two states following the system at that time and in 1926 the 1917 statutes had disappeared but two newer laws had taken their places.

B. *Laws Permitting the Establishment of Rating Bureaus.*—The second group of laws comprises those which permit and authorize the establishment of rating bureaus or permit the formation of agreements to make rates, which results either in a rating organization which sells rates to the companies or an association of agents or companies which makes the rates. In 1917 there were four such laws on the statute books and by 1926 this type of law had been adopted by thirteen states. It constitutes one of the two types of legislation whose popularity is growing. Of the thirteen states where this form of regulation now exists, six have laws which appear to give the superintendent little or no power over the revision of rates. Of these six, two (South Dakota and West Virginia) are substantially alike and provide:

(1) That rating bureaus are recognized by law.
(2) That the insurance commissioner shall have power to examine such rating bureaus.
(3) That the insurance commissioner may require companies to file underwriting rules, schedules, rates of premium and forms used.
(4) That the insurance commissioner may investigate general advances or reductions in rates and approve or disapprove the same, subject to court review.

In four other states (Idaho, Oregon, Pennsylvania and Washington) the law is substantially the same except that, on paper at least, the commissioner has less power with respect to disapproval of rates.

In seven states the laws provide for all of the above and in addition give to the superintendent or an insurance board power to disapprove unreasonable or excessive rates and fix reasonable ones. Of these, three statutes (Arkansas, New York and South Carolina), are substantially similar and provide:

(1) That rating bureaus are recognized by the law.
(2) That the insurance commissioner has power to examine such rating bureaus.

(3) That the companies and bureaus are required to file underwriting rules, schedules, rates of premium and forms used.
(4) That the commissioner may hold hearings to investigate alleged discriminations and order discriminations removed.
(5) That the commissioner may investigate rate agreements and disapprove the same, subject to review by the courts.
(6) That the commissioner may order general reductions in rates if, during the preceding five years, the stock companies show an underwriting profit of five per cent on business within the state.

In four other states (Michigan, Vermont, Missouri and North Carolina) the laws are almost identical, but the provision regarding revision of rates does not allude to the experience of the preceding five years and merely refers to unreasonable or excessive rates.

Included in this group is New York, which has the most complete law on the statute books and receives some description later.

C. *Laws Requiring the Establishment of Rating Bureaus.*—Of those states which have enacted rate regulation laws, a third group of nine states actually require the insurance companies to form rating bureaus and to be members thereof. There were only three such laws in 1917 and by 1926 the number had increased to nine, this type of legislation thus showing a very great relative increase. These laws are all practically identical in character. Also, with the exception of the statute in Ohio, they all provide for the revision of rates by the insurance commissioner or other state authority. Except for this latter difference they are substantially the same as the laws which merely permit the formation of bureaus, and therefore require no further comment except to point out that this type of legislation is a startling contrast to the laws prohibiting combination which were formerly so popular and that they virtually nullify anti-trust and anti-compact laws, although the latter in nearly every instance remain on the statute books. Taken together the laws *permitting* bureaus and *requiring* bureaus show an increase from seven to twenty-two during the period under review.

D. *Outline of the New York Law.*[13]—By the New York law fire insurance companies and agents are permitted to become members of rating organizations or bureaus, which organizations are required to admit to membership without discrimination all persons authorized to transact fire insurance in the state. No person, association or corporation, however, shall be a member of more than one organization for the purpose of rating the same hazards, and members of organizations are required to comply with all the rates and rules promulgated by the organization.

Every such rating organization which suggests or approves rates to be used by more than one underwriter must furnish to the superintendent of insurance a list of members and a description of its organization, together with such other information as the superintendent may deem desirable and is subject to visitation and examination by the insurance department. The organization or bureau must not refuse to do business with any broker licensed by the state unless the latter refuses to abide by the reasonable rules of the organization. It is also required to keep complete records of its proceedings and to furnish to the insured or his representative upon request information respecting the manner in which his rate was arrived at.

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[13] Laws of 1922, Secs. 141, 141-a.

All such organizations must file with the superintendent of insurance the rates and rating plans which are in use, and the rates filed must not (a) be discriminatory or (b) require the placing of the entire amount of insurance with members of the organization. The superintendent of insurance may, after a hearing, order the removal of discriminations, subject to review by certiorari order in the supreme and appellate courts of the state. The act requires that the rules, schedules and methods of rating shall be reasonable, and the rates are to be either minimum class rates, schedule rates or (in the discretion of the superintendent) non-schedule flat rates. No member may write insurance, except under the rules and rates of the organization of which he is a member, but upon thirty days' notice any company may, subject to the approval of the superintendent, charge rates which are a uniform percentage higher or lower than the organization rates.

Every underwriter transacting a fire insurance business in the state is required to file annually with the bureau of which he is a member, a statement of premiums written and losses incurred for the information of the insurance department. The superintendent of insurance may hold hearings to investigate rates and may require an adjustment of same whenever the profit derived over a period of five years preceding is "excessive, inadequate, unjust or unreasonable," subject to review by the courts as described previously.

It will be noted that this law contains the following essential features:

(1) It authorizes the formation of rating bureaus.
(2) It enables such bureaus to enforce their reasonable rules and rates.
(3) It prohibits discrimination by such bureaus among insureds' agents and brokers.
(4) It makes such bureaus and their acts and records subject to examination by the insurance department.
(5) It gives the superintendent of insurance power to revise rates.

VII. LAWS AUTHORIZING EXAMINATION OF RATING BUREAUS

All of the rate regulation laws permitting or authorizing the establishment of rating bureaus give the insurance commissioner power to examine the operation of such bureaus, so that the number of states authorizing such examinations has increased from twelve to twenty-four.

VIII. CONCLUSION

The foregoing survey of legislation seems to indicate that the present-day tendency is to enact laws which encourage the promulgation of rates arrived at by mutual agreement and co-operation, thus recognizing that price competition is not a satisfactory guiding principle in the regulation of insurance, due to the inherent nature of the business. The New York statute, although merely permitting the formation of rating bureaus, is the most complete and comprehensive law on the statute books and it is difficult to see how other states which permit the formation of rating bureaus can avoid adding to their statutes additional provisions similar to those of New York.

Weather Forms of In[illegible]rance

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THE term "weather insurance," when used, usually refers to rain insurance. It covers loss of income and/or expenses occasioned by rain and other precipitation when measured as rainfall and is written on any one of a number of forms. From the title of this paper—"Weather Forms of Insurance"—one might be led to believe that it relates only to rain insurance. The term instead is used in a broader sense. It will, therefore, be in place at the outset to define and outline its limits.

Weather forms of insurance are here used to include those contracts which insure against loss occasioned by the action of one or more of the various elements composing the atmosphere. Tornado insurance is one such form; hail insurance is another. Included under this general heading, also, are rain insurance, frost and freeze insurance, and crop insurance. By broadening the use of the term considerably one might include flood insurance since indirectly the damage may relate to the weather. Still more distantly related is earthquake insurance. These two last named types of insurance are not distinctly and entirely related to elements of the weather, however, and should not therefore be included in the group. The lightning hazard is distinctly a weather risk though it is not considered here because it is seldom written as a separate form.

There are then five types of weather insurance: tornado or windstorm, hail, rain, frost and freeze, and crop. Each of these forms, to be scientifically written, requires a knowledge of the frequency and intensity of one or more of the various types of atmospheric action. They find a common basis in the science of meteorology. Hail, frost and crop insurance are related, also, in being agricultural forms of insurance covering growing crops. In addition, these three forms of insurance together with rain insurance indemnify for loss of prospective income or for expenses incurred. The tornado or windstorm contract insures against damage done to property already in existence. These points of similarity and contrast will be more evident in a separate consideration of each form and will be summarized in a later section.

I. TORNADO INSURANCE

Of the five types of weather insurance, tornado ranks first, judged by total premiums for the year 1925. Tornado insurance might be more appropriately called windstorm insurance since in its usual form it covers loss occasioned by wind, whether of a local character such as tornadoes and local windstorms, or of a widespread character including cyclones and hurricanes. This form of insurance is known to have been written as far back as 1861,[1] though it has developed into an important "side-line" only within the last fifteen years. Figures annually published by the Spectator

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[1] Hoffman, F. L., *Windstorm and Tornado Insurance*, Spectator Co., 1902.

Company[2] indicate that total premiums received by all reporting companies did not reach the $1,000,000 level until 1908 and for los[illegible] paid until 1912. For the year 1912, premiums jumped to $1,667,000, an increase of 150 per cent over that of the previous year and losses increased to $1,870,000 or 265 per cent above the previous year. Table I has been prepared to show the growth of this line of insurance during the past fifteen years. For the year 1925 total premiums received for tornado insurance amounted to nearly $40,000,000, which places this type of insurance fourth among the various forms covering property damage, being exceeded only by fire, motor vehicle, and ocean marine insurance.

TABLE I—PREMIUMS AND LOSSES ON TORNADO INSURANCE IN THE UNITED STATES, 1911–25*
(In thousands of dollars, *i.e.* 000 omitted)

Year	Premiums	Losses	Year	Premiums	Losses
1911	$1,805	$512	1918	$12,764	$5,112
1912	4,667	1,870	1919	16,508†	4,471†
1913	4,620	1,401	1920	21,602	7,235
1914	6,745	2,667	1921	17,888	6,835
1915	6,295	2,523	1922	22,457	7,376
1916	7,427	2,200	1923	28,663	9,967
1917	13,568	4,844	1924	32,653	15,691
			1925	39,162	15,215

* Compiled from figures given in *Distribution by States of Fire Insurance* prepared and published annually by the Spectator Company, New York City. This company has also published since 1919 another compilation of premiums and losses on tornado business in their *Insurance Yearbook*. In the *National Underwriter* has been published a summary for several years. These compilations vary considerably for certain years, notably in 1920 and 1923. The series shown in Table I was chosen because it extends over a longer number of years than the other tabulations.

† From *Insurance Yearbook*, Spectator Co., 1920.

II. HAIL INSURANCE

Second in importance among the weather forms is hail insurance. It covers damage to growing crops, principally grain, occasioned by hail. Its history in the United States dates back to 1830 though it has assumed proportions of importance only within the last fifteen years. Prior to the year 1912 the total amount of insurance written by joint-stock, mutual and state funds combined amounted to less than $50,000,000.[3] Premiums received from all classes did not reach the $5,000,000 level until 1914. Since 1914, through a somewhat irregular growth, premiums have increased to an amount probably in excess of $20,000,000. Table II has been compiled to illustrate this growth from 1912 to and including the year 1925.

In the preparation of Table II, reliable and comprehensive data for the years 1912 to 1919 inclusive were obtained from the United States Department of Agriculture. For subsequent years the figures used were those compiled for the *National Underwriter* and appearing in its annual "Hail and Tornado Insurance Number," and while they include the experience of a large number of companies they are not as comprehensive as the figures for the

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[2] Spectator Company, *Distribution by States of Fire Insurance*, New York, (annual).

[3] Valgren, V. N., *Hail Insurance on Farm Crops in the United States*, United States Department of Agriculture, Bulletin No. 912.

TABLE II—PREMIUMS AND LOSSES ON HAIL INSURANCE IN THE UNITED STATES, 1912–25 *
(In thousands of dollars, *i.e.* 000 omitted)

Year	Joint-Stock Companies		Mutual Companies †		State Funds		Totals	
	Premiums	Losses	Premiums	Losses	Premiums	Losses	Premiums	Losses
1912	$1,640	$996	$1,474	$713	$65	$105	$3,179	$1,814
1913	1,773	696	1,418	503	27	28	3,218	1,227
1914	3,213	1,663	2,317	976	28	38	5,558	2,677
1915	6,395	8,239	2,691	3,057	21	25	9,107	11,321
1916	8,185	7,565	1,741	1,145	33	79	9,959	8,789
1917	8,003	4,212	2,292	1,000	119	79	10,414	5,291
1918	12,854	7,771	3,614	2,127	576	1,030	17,044	10,928
1919	19,460	7,895	4,775	2,060	6,095	4,538	30,330	14,493
1920	16,910	9,755	2,678	1,582	5,777	5,037	25,365	16,324
1921	13,426	9,071	2,220	1,081	7,200	3,540	22,846	13,692
1922	10,422	7,770	2,271	1,913	6,061	4,858	18,754	14,541
1923	11,919	11,059	1,893	996	5,189	5,184	19,001	17,239
1924	9,831	8,372	580	445	4,218	4,065	14,629	12,882
1925	14,741	9,922	1,663	1,093	2,342	1,955	18,746	12,970

* For the years 1912–19, data supplied by the United States Department of Agriculture. For the years 1920–25, data from the *National Underwriter*, hail and tornado numbers.

† The mutual company figures for the years 1912–14 probably include some Canadian hail business, though not for later years. In certain years for mutuals and also for state insurance hail funds, losses were prorated. As far as could be determined the figures given are losses incurred rather than losses paid.

earlier years. The Spectator Company in its *Insurance Yearbook* also makes an annual compilation of hail "premiums and losses for stock fire and marine companies" which for the year 1925 gives a total of $17,139,395 premiums received and $11,130,835 losses paid. The Weekly Underwriter in its *Insurance Almanac* also publishes an annual compilation for stock companies which for the year 1925 amounted to $16,602,800 and $10,321,736 for premiums and losses respectively. These last two sources for joint-stock companies are more comprehensive for the year 1925 and indicate that total premiums received from all three sources, joint-stock, mutual and state fund, exceeded $20,000,000.

III. RAIN INSURANCE

The Eagle, Star and British Dominions Insurance Company was the first company to write rain insurance in the United States. It began writing in England in 1919 and in the United States in 1920.[4] Lloyd's of London had, however, written this line as one of their numerous specialties for many years. In 1921 there were three companies writing and in 1925 the number had reached thirty. Table III has been prepared to show the growth of rain insurance up to and including the year 1925. For the years 1923, 1924 and 1925 the data were supplied by the Rain Insurance Association and include all of the companies writing rain insurance in the United States. It should be pointed out that the figures for Table III do not include business written by Lloyd's. No information is to be had concerning their writings, which may have been considerable, particularly for the years 1924 and 1925. For the years 1922 and 1921 estimates only are available which, however, serve to indicate the growth for these years.

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[4] DeWitt, C. L., "Weather Insurance" in "*Special Lines*" *Lectures*, the Insurance Society of New York, 1923.

TABLE III—THE GROWTH OF RAIN INSURANCE IN THE UNITED STATES, 1921–25
(In thousands of dollars, *i.e.* 000 omitted)

Year	No. of Companies Writing	Writings	Net Premiums	Losses Incurred	Ratio: Losses: Premiums
1921*	3	.	$1,000 (about)	$1,000 (about)	$1.00 (about)
1922†	7	. . .	1,843	1,173	.64
1923‡	12	$46,095	4,315	3,732	.86
1924	29	22,795	2,256	1,624	.72
1925	30	12,329	1,114	794	.71

* For the year 1921 the estimates are from an article by C. L. DeWitt appearing in "*Special Lines*" *Lectures* published by the Insurance Society of New York.

† Figures for the year 1922 taken from the *Insurance Almanac* published by the Weekly Underwriter Publishing Co. of New York.

‡ For the years 1923, 1924, 1925, data supplied by the Rain Insurance Association.

Rain insurance proposes to cover loss of income or expenses occasioned by rainfall or other precipitation when measured as rain. Up to the present time it has been used largely to cover fairs, athletic contests, auctions and similar events. Sufficient time has elapsed to prove it a practical form of insurance, though for most of the years and notably in 1923 experience has been unfavorable. Rates have been raised and renewed effort made to place the insurance with desirable risks on a strictly indemnity basis. As a result, while the years 1924 and 1925 show a smaller volume of business, they show a more favorable loss ratio.

IV. FROST INSURANCE

Frost insurance became a practical form in the United States following a survey made by insurance representatives in 1920. It has since that time been applied in Florida, California, Louisiana and in a minor way in other states with a varying degree of success. It is usually applied to citrus fruits and insures against damage by frost after the fruit has set on. In some instances the trees are also insured against damage by frost or freeze. There are no available statistics showing the development since 1920 of this type of insurance. The figures to be had are fragmentary and merged usually with other minor forms of insurance. For the year 1925, the Spectator Company in their *Distribution by States of Fire Insurance* has made an interesting compilation which includes fourteen companies writing frost insurance in five states. While their figures do not include all of the companies, they are

TABLE IV—PREMIUMS AND LOSSES ON FROST INSURANCE BY STATES FOR THE YEAR 1925

State	Net Premiums	Losses
Arkansas	$147	$3,759
California	110,251	162,080
Colorado	292	6
Florida	98,643	593
Louisiana	36,839	3,101
Total	$246,172	$169,489

instructive. Table IV presents the experience of these fourteen companies classified by states.

It will be seen from Table IV that for this particular year (which is the business of the winter of 1924–25), the Florida and Louisiana experience was very favorable and the California experience very unfavorable. This was the case also for the winter of 1923–24. During the winter of 1925–26, experience was again favorable in Florida but unfavorable in Louisiana and in California favorable to the insuring companies.

V. CROP INSURANCE

Insurance on growing crops may take one of two forms: either a contract covering one specific hazard as hail or frost or a blanket contract insuring the farmer against many of the hazards to which his crops are exposed. The term crop insurance is usually applied to the latter form of contract. It proposes to insure the farmer against loss or damage to his growing crops when caused by frost, winterkill, flood, drought, insects or disease. In some cases hail is included and in many cases in the past the contract has been so worded that it has turned out to be, in addition, insurance against a decline in the market value of the crop.

Crop insurance was first attempted in the United States in 1899 and so far as the court records indicate the company lasted but one season.[5] Three other attempts were made in 1917 but they met with failure. Again, in 1920, an attempt was made to apply this form of insurance but heavy losses resulted and the companies withdrew from the field so far as the major crops were concerned. One joint-stock company has, however, continued to write small amounts using special forms to fit each case and issuing it through crop-growing associations (notably in fruit) to be used by the insured for credit purposes. It is interesting to note, also, that a mutual company in Kansas has recently gone into the hands of a receiver after one year's experience with a crop policy. In the same state, another mutual company has been organized to write crop insurance covering costs of crop operations.[6] Crop insurance is still decidedly in the experimental stage.

VI. LOSS EXPERIENCE

Each of the five forms of insurance just reviewed covers one or more of the weather elements. The hazard which the insurance company runs in each case (aside from problems of moral hazard) is therefore dependent upon the extent and variability of the weather risks insured. If one assumes that the company's expenses are thirty-five per cent of net premiums collected, then if losses incurred each year average less than sixty-five per cent of total net premiums and no one year's loss is so large as to force the company to withdraw from the field, the business is on a profitable basis.

Of the five weather types, frost insurance and crop insurance have either not been tried for sufficient length of time or on a large enough scale to prove themselves profitable lines. Rain insurance also needs a longer and wider experience to prove itself, though it has made a much better start than either frost or crop insurance.

Of the remaining two weather forms, both have been tried for a long enough period to prove practical lines, though from year to year and between companies they have had a varied experience and are still far from stable forms of insurance. Table V shows the loss ratios from the combined experience of all joint-stock companies writing either hail or tornado insurance in the United States. Tornado insurance premiums and tornado losses of all joint-stock companies have been totaled by years and the total losses divided by the total premiums. The same has been done for the hail business and for comparative purposes, for the fire business.

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[5] Hoffman, G. Wright, "Crop Insurance—Its Accomplishments and Possibilities," *The Annals of the American Academy of Political and Social Science*, January, 1925.

[6] See issue of the *Weekly Underwriter* October 16, 1926 and November 13, 1926.

TABLE V—LOSS RATIOS OF THE COMBINED BUSINESS OF A LARGE NUMBER OF JOINT-STOCK COMPANIES, FOR TORNADO, HAIL, AND FIRE INSURANCE, FOR THE YEARS 1912–25

Year	Ratio: $\frac{\text{losses incurred}}{\text{net premiums received}}$		
	Tornado Business*	Hail Business*	Fire Business†
1912	40	61	53
1913	30	39	53
1914	39	52	60
1915	40	129	53
1916	29	92	53
1917	36	53	51
1918	40	60	46
1919	27	41	40
1920	33	58	46
1921	35	68	59
1922	38	75	57
1923	35	93	52
1924	48	85	58
1925	39	67	55
Average	36	69.5	52.6
Average annual deviation	4.3	18.1	4.
Average annual percentage of deviation	11.9	26.	7.6

It will be seen at once that, judged from the past fourteen years, the tornado business has been profitable and the hail business particularly during recent years unprofitable. From the "average annual deviation" and from the "average annual percentage of deviation" it will be seen that both the actual and relative variation from year to year in loss experience is much greater for hail than for tornado or fire insurance.

An attempt has been made in Table VI to present some comparable experience for individual companies for tornado, hail and fire insurance. The material is somewhat fragmentary, however, and only a limited comparison can be made. The tornado experience of five leading stock companies is shown with the fire experience of the same five companies. It was impossible to find five companies for a ten-

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* From Tables I and II.

† From *Proceedings of the National Bureau of Fire Underwriters* (annual); includes lightning business and prior to 1918 marine and inland premiums and losses.

TABLE VI—LOSS RATIOS OF FIVE LEADING JOINT-STOCK COMPANIES FOR THEIR TORNADO, HAIL AND FIRE INSURANCE BUSINESS DURING THE TEN-YEAR PERIOD, 1916–25

Year	Ratio of Losses Incurred to Net Premiums Received														
	Tornado business of 5 Companies*					Hail Business of 5 Companies*					Fire Business of 5 Companies†				
	No. 1	No. 2	No. 3	No. 4	No. 5	No. 3	No. 4	No. 6	No. 7	No. 8	No. 1	No. 2	No. 3	No. 4	No. 5
1916	41	41	20	80	72	95	94	72	110	98	51	49	55	79	54
1917	47	52	30	61	34	58	49	78	60	60	45	42	45	41	52
1918	45	38	64	44	91	68	62	70	61	51	48	46	48	53	45
1919	25	44	24	26	24	43	38	34	37	37	40	49	39	46	39
1920	34	41	29	00	23	63	62	41	56	42	46	43	44	46	40
1921	33	26	31	37	33	79	71	37	70	41	63	59	52	66	58
1922	45	27	24	25	41	72	85	102	81	79	58	55	49	47	43
1923	45	33	35	53	95	70	120	120	107	92	53	53	50	51	56
1924	36	34	38	50	48	78	66	104	58	70	54	58	60	59	53
1925	26	22	32	51	32	66	61	63	75	58	56	55	59	73	54
Aver.	37.7	35 8	32.7	48.7	49.3	63.7	70.8	71.6	71.5	63.4	51.4	50.4	50.1	56.1	49.4
Av. An. Deviation	6 9	7.4	7.9	12.6	22.	10.1	17 4	22.6	17.4	17.6	5.4	4.6	5.1	10.5	6.1
Av. An. Per cent of Deviation	18.3	20 6	24.1	25 8	44.6	14 7	24 5	31 5	24.3	27.7	10.5	9 1	10.2	18.7	12.3
	(In thousands of dollars, *i.e.* 000 omitted)														
Net Prems. rec'd., year 1925	$1,741	$164	$3,572	$33	$861	$3,599	$123	$316	$425	$856	$21,514	$3,826	$47,977	$537	$11,257

* Data from Hoffman, F. L., *Tornado Insurance*, 1926 ed., the *National Underwriter*, hail and tornado numbers, and *Distribution by States of Fire Insurance*, pub. by the Spectator Company annually.

† Data from the *Insurance Yearbook* published by the Spectator Company (annual).

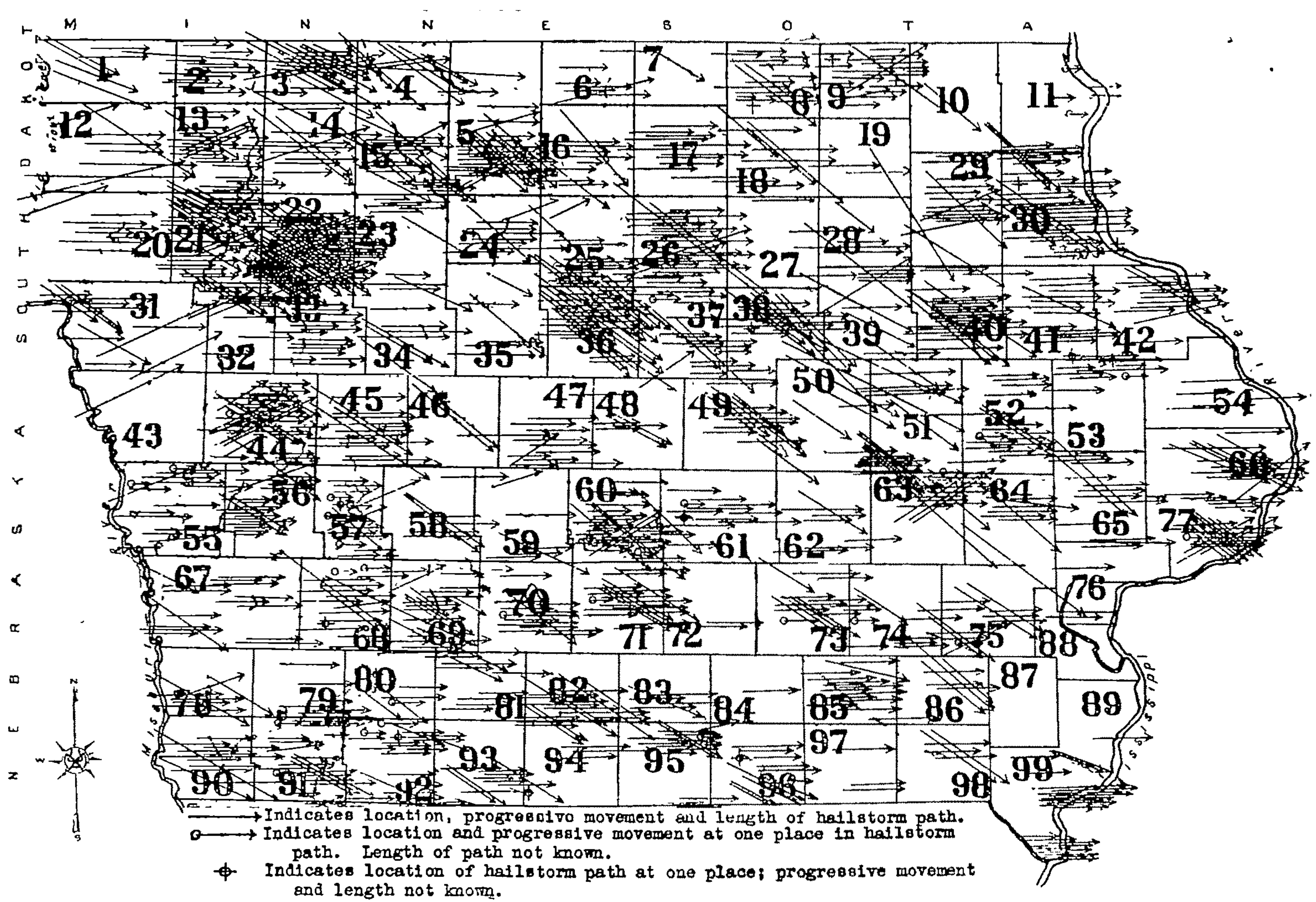
year period who did a fair volume of business in all three lines and therefore three of the hail companies are not identical with the tornado and fire companies. To indicate the relative size of the companies included, their net premiums for the three types of business are shown for the year 1925.

The results of Table VI are similar to those of Table V with reference to the average loss experience of these companies. With respect to the "average annual deviation" and particularly the "average annual percentage of deviation" which shows the relative variation in loss experience from year to year, the tornado business of individual companies fluctuates more than the hail business and each varies much more from year to year than the fire business. The conclusions which may be drawn from Tables V and VI are: (1) that the hail business has been less profitable and the tornado business more profitable on the whole during the past fourteen years than the fire business per $100 of premiums received; and (2) that neither the hail nor the tornado business, considered either by companies or as a class of insurance, is on as stable a basis as the fire business. This is doubtless due in part to a lack of spread, in part to faulty graduation of rates between individual risks, and in part to the inherent nature of the risk insured.

VII. THE OUTLOOK

All of the forms of weather insurance depend for their success upon a knowledge of the frequency and intensity of one or more of the weather elements. This does not mean that with such a knowledge success is assured. Items of new business expense, adjustment of claims, unusual costs growing out of the selection of risks may cause success for one company and failure for another. But of basic importance is an adequate knowledge of the elements of weather being insured. Large sums of money have been spent by the group of companies writing rain insurance to determine the relative frequency of rain for different localities by days and in some cases by hours of the day for the purpose of determining an equitable and adequate plan of rating. Extensive research has similarly been made for frost insurance. In their rating of hail and tornado risks, the experience records of the various companies serve as valuable files to guide them.

But while the records of companies include thousands of cases and extend over a good many years, they are for rating purposes still very inadequate. No one realizes this fact as much as the underwriting companies themselves. They are called upon to write a policy covering the tornado hazard perhaps in a section where their experience is fairly complete for two or three years but not longer or where only extremely scattered information if any is available. There were during the year 1925 over two hundred direct-writing companies writing tornado insurance. Necessarily most of these in most of the states could not have much knowledge of the risk being insured. Fortunately for the underwriting companies in tornado insurance, the rates have been placed sufficiently high that, hit or miss, they have on the whole come out with a profit. But such a plan only discourages altogether the insuring of property against this hazard where the probability of serious windstorm damage is small and decreases the amount taken out in sections where the danger is relatively high. Windstorm insurance should be as universal in its application as fire insurance. What is true of tornado experience is also true of the

MINNESOTA
SOUTH DAKOTA
NEBRASKA
Missouri River
Mississippi River
N
S
→ Indicates location, progressive movement and length of hailstorm path.
o→ Indicates location and progressive movement at one place in hailstorm path. Length of path not known.
⊕ Indicates location of hailstorm path at one place; progressive movement and length not known.

hail business. Rates are graduated according to geographical divisions rather than regions of hail frequency, and adjusted from year to year in the light of the previous year's experience. What is needed is a more dependable experience record upon which rates can be based.

Mention should here be made of the work of the National Storm Insurance Bureau. This is an insurance rating organization located in New York and directed by John P. Finley, retired colonel, United States Army. This bureau was organized by Mr. Finley in 1920. He brought to it an experience in the field of meteorology extending over forty years through his work with the United States Weather Bureau and the United States Signal Corps of the Army.

This Bureau has developed what is known as the "Finley Rating System for Weather Insurance." Starting with the published information of the United States Weather Bureau, it has added elaborate tabulations of local storm data obtained through local weather reports and newspaper and magazine references and descriptions. From these data extending over many years, storm tracts have been prepared by states and counties showing for each type of storm, its location, length, and progressive direction. Through the use of formulae descriptive of the relative intensity of the storm, a rating system has been developed which accounts for both frequency and intensity of each type of storm. The chart shown is a reproduction of one of the state hailstorm tracts loaned through the courtesy of the National Storm Insurance Bureau. The chart emphasizes in a striking manner the fact that the hail hazard varies greatly from one section to another and to effectively provide for expected losses, premiums must also be similarly graded.

Collecting, tabulating, charting and analyzing storm data for every state and for every type of storm in the United States for time series extending over many years is a task of immense proportions. In attempting such an undertaking, the National Storm Insurance Bureau deserves not only the commendation but the active support of all interested groups. The organization in a position to render the most far-reaching and valuable service in widening the scope of scientific knowledge in this field is the United States Weather Bureau. The work of this bureau in the past has certainly returned in value to the American people their investment many times over. One of the pressing problems before Congress during the past five years has been to devise some means of insuring the farmer against an occasional unusual surplus production of one or more of the major crops. Is not the permanent solution to this problem found in a more dependable knowledge of weather variations and an adequate provision for these variations? We have recently witnessed a hurricane disaster in Florida resulting in a loss of over a hundred million dollars and insurance covering only a small fraction of the total loss. We are entering the field of commercial aviation on a large scale in which a knowledge of weather is of first importance. In agriculture, in transportation and in industry, we are in need of a more complete and dependable knowledge of the weather. Would not the enlargement of our Weather Bureau service, both in the collection and in the analysis of information, be money well spent?

The Guarantee of Mortgage Bonds by Surety Companies

By Edward L. McKenna, Ph.D.
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ALTHOUGH isolated examples of the guarantee of mortgages occur in the history of suretyship, present practice in this form of coverage is not more than three years old. The connections of the Globe Indemnity Company with the Adair Company, and of the National Surety Company with the Mortgage Security Corporation of America are early modern instances, and similar ones are to be found in the experience of the Fidelity and Deposit Company and of the Independence Casualty Company.

At the present time, the following companies are writing surety bonds to guarantee mortgages:

- National Surety
- Maryland Casualty
- Globe Indemnity
- Metropolitan Casualty
- United States Fidelity and Guarantee
- Massachusetts Casualty

These companies are writing under a uniform premium of one-half of one per cent on the face of the guarantee per year. In practically no other respect is there uniformity.

Some of these companies are much interested in the development of the business and show a readiness to compete for it. Others have reached the present limit of their underwriting capacity as determined by their own executive boards; reached it last year; reached it again this summer; occupy the pleasant position of having more customers than they can accommodate at this time. Another company on this list, although it must be included in it, is apparently curtailing its present position instead of extending it.

Some of these companies write business in thirty states or more, and in upwards of three hundred cities. Some of them have limited their operation to a single state. Many of them exclude certain states for one reason or another. Only one of these companies proclaims that it makes no restriction as to territory.

The form of the guarantee is not uniform; it is anything but uniform. Some companies have a separate staff and a separate department to investigate and handle this business, others make no such provision. Most companies demand an eighteen months' option period in case of default by mortgages, but all sorts of periods are found—sixty days, three months. Some companies will guarantee all of an issue or none of it, others will insure a part of the issue, or use two separate forms of guarantee for different sections of the same issue. Agreements exist which are not transferable by the certificate holder without payment of a premium; in other words, the purchase of the guarantee is optional with the certificate holder. The more general arrangement at present is for a guarantee printed on the bond and transferable with it.

Among the companies not included among these six there are nevertheless possible underwriters. At least two companies declare that they will consider an individual application from a mortgage company upon its merits, although they are not at present writing such guarantees. Another company which formerly wrote the business now does so no longer. Certain other companies declare themselves unwilling to enter the business at the present time for one or more of the following reasons:

(1) The uncertainty of the real estate market.
(2) The uncertainty of a reinsurance market, should the company desire to split the risk.
(3) Lack of facilities within the company for the investigation of mortgage loans.
(4) Belief that it is improper to allow the company's name to be used as a selling argument in campaigns for the marketing of the securities.

The present situation in the mortgage-bond guaranty situation then is this: six companies writing the business, at least two of them to the present limits of their capacity and a third approaching a capacity stated to be well up in the millions of dollars; interest in such business displayed by other companies to an extent that indicates a willingness to enter the field; opposition or lack of interest displayed by other companies for reasons here enumerated; lack of uniformity among the writing companies with reference to practices and forms such as might be expected in so new a business.

WHY ARE MORTGAGE BONDS GUARANTEED BY SURETY COMPANIES?

There seems to be little question that the principal motive which actuates the seller of mortgage certificates in applying to surety companies for guarantee is his desire to make these certificates more attractive to purchasers. Such certificates themselves may have as security the tangible values of the property and improvements, specific deposits of collateral with a trustee, and the credit and assets of the issuing house. For many years certain well-established dealers in mortgage certificates have given their own guarantee of some issues to their buyers, for a premium of one-half of one per cent per year. They are able to do this because of the state of their credit, because of their business record and their reputation for conservatism extending over a considerable period of years. Such houses as these have performed a service for investors which younger and less well-known corporations could not duplicate. There can be little doubt that the solicitation of surety companies by sellers of mortgage certificates was a competitive move either to meet a difficulty already experienced in competitive selling, or in anticipation of such a difficulty. Once the support of the surety company is obtained, it seems to be a fact that the name of the company is used in selling arguments.

That this practice is undesirable or dubious does not appear. The bonding company may be making its guarantee in either of two ways; first, after painstaking and thorough examination of the risk by a corps of experts; or second, somewhat more cynically with an eye merely to rates of mortality in mortgage investments and to the spread of risks. Or it may combine these two methods in varying proportions.

In the first case it is proceeding along the lines which are peculiar to the business of suretyship; in the second, it is acting as an insurance company. Naturally, if the second method encourages carelessness on the part of original issuers or sellers of certificates the effect upon the general business of selling mortgage certificates will not be good. But the effect of failure of any mortgage dealers will not help the mortgage business either, and has not helped it, and if the bonding company steps in to cover losses to investors it will be more desirable from the standpoint of the companies that remain than if disgruntled investors are left to carry their sad story to prospective purchasers and to ruin many future sales. The failure of a competitor is not always an unmixed blessing.

Furthermore, the argument that guarantees or insurance increase carelessness is so old that it can scarcely fail to have some truth. It has been applied to almost every branch of insurance at one time or another. Few, however, will be found to give the theory complete endorsement.

On the other hand, if the guarantee of such bonds by one or another form of corporation becomes general, irresponsible competition may be lessened rather than increased. At the present time, too, the company which is big enough and sufficiently autonomous to guarantee its own bonds or those for which it is sponsor, at the rate of one-half of one per cent, is doing business more profitably than a surety company can do it, for the mortgage company already has made an examination of the bonds and has charged for it, and the guarantee premium may be used to cover losses, if there are any, whereas the surety company must spend something out of the premium for expenses other than losses.

It is well recognized that in every department of the surety business premiums at first tend to be charged upon a semi-actuarial basis, that is, that they are written chiefly with reference to known or estimated loss-ratios. As time goes on, more and more attention is paid to the reduction of losses and to the classification and investigation of risks, and premiums are altered accordingly in both directions, up and down. There is reason to believe that the maintenance of separate departments for the investigation of mortgage issues will be continued and developed, and that it will help the mortgage business and not harm it, and that ultimately it may help even the companies which have no need for separate surety company guarantees. The amount of competition now existing indicates clearly that the business is no one's exclusive field, and as these securities fall into the hands of so many small investors it seems desirable from every point of view that they should be surrounded with every safeguard. Anything which tends for the greater security of such investments should be a good thing for the business as a whole.

FORM OF SURETY GUARANTEE

As has been stated, the guarantee of the surety company is not a uniform one. Mr. P. E. Kniskern,[1] Vice-President of the National Surety Company, has said that the guarantee should be short, concise and easily worded, and so simple as to be understandable to those with little business experience. A form of guarantee adopted by the National Surety Company is as follows:

> For value received, we hereby jointly and severally guarantee to the holder hereof the payment of this bond or note and also the payment of the attached interest coupons, as the same fall due, without necessity of recourse to the collateral deed of trust or the primary obliger, upon condition that at our option we are to be allowed eighteen months from the date of maturity of principal within which to make payment, but with interest on the principal sum in the meantime at the before-maturity rate named in the bond or note.

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[1] P. E. Kniskern, "The Surety Company and the Guarantee of Notes Secured by Real Estate." An address delivered before the Intermediate Surety Class of the Insurance Institute, New York, February 25, 1926.

It is clearly desirable, as Mr. Kniskern says, that this guarantee should be simple and easily understandable. In fact, however, all sorts of qualification of the guarantee are in existence, to an extent that it is impossible to enumerate them. Mr. Stanton, Vice-President of the Metropolitan Casualty Company, says that there are three general forms of guarantee, each of them subject to modification under particular circumstances; one which is used when collateral has been deposited of high marketability and unquestioned value, one which has to do with the trustee, and a third which guarantees the overlying security.

Some guarantees are for part of the issue only, and some contain careful qualifications and stipulations and restrictive clauses and are far from being easily understandable, however concise they may be. The guarantee is now usually printed upon the bond itself and might well be read by the prospective purchaser. Some company officials question whether uniform guarantees are at present practicable.

In a pamphlet issued by the National Surety Company, Mr. Kniskern says of the option of deferred payment by the surety company, which appears in the quoted example above, that it would be well to have a uniform period of eighteen months stipulated for all companies doing a widely-spread business. The theory of the option period is that it will allow a transfer of the property, or a foreclosure, and then an elapsing space of time after foreclosure within which redemption is possible. State statutes differing concerning the length of time of the redemption period, a shorter time-limit is practicable enough in some localities and might appear more desirable to the certificate holder. From the point of view of the surety company, a uniform period would seem to be desirable.

Mr. Philip Sydney Rice,[2] of the Mortgage Security Corporation of America, is opposed to the form of guarantee which may be purchased by the bond certificate holder or not at his option. This method, he says, is frequently used by salesmen as an argument in favor of the bond without any corresponding effort on their part to induce the prospective buyer to avail himself of the guarantee. Similarly, he says, where a part of the issue has been guaranteed only, the prospective purchaser is solicited to buy unguaranteed portions. He concludes that the only form of surety guarantee should be "an unqualified guarantee covering full payment of principal and interest from date of issue to date of maturity."

GENERAL CONDITIONS NECESSARY IN ACCEPTABLE RISKS[3]

Although here, as elsewhere, local conditions make for variation in practice, certain general statements may be made concerning some characteristics of acceptable risks.

The lender must be an incorporated mortgage company. The mortgages must be deposited with a trustee, who is suitable. Title insurance policies and fire insurance policies must likewise be deposited with him. The Mortgage Company itself must generally not be engaged in any other business, so that its assets may not be diverted in case of misfortune.

Mortgages must be first mortgages on improved property.

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[2] Mr. Philip Sydney Rice, "The Purpose of Mortgage Bond Guarantee." An article in *The Casualty Insuror*, December, 1925.

[3] See "Guaranteeing Mortgage Bonds," an editorial in *The Casualty Insuror*, September 1925; P. S. Rice, "Purpose of Mortgage Bond Guarantee," December 1925; "The Mortgage Guaranty Bond," by J. W. Bristor, in the *Weekly Underwriter Bonding Supplement*, 1925; P. W. Kniskern, in *Weekly Underwriter Bonding Supplement*, 1926.

In the absence of other considerations, certain classes of property are not generally acceptable. These include theatres, hotels, churches, garages, warehouses, filling stations and other property whose purposes are highly specialized. Large apartment houses are sometimes included in this list.

The property is appraised by two disinterested experts and the loan must not exceed sixty per cent of such value; in some cases, fifty per cent is taken as a limit. Practice makes the amount of the loan nearer fifty per cent whatever the established limit is.

The law of the state must not be too cumbersome with reference to foreclosures or rights of redemption by mortgagees. It must also be examined concerning mechanics' liens and how they may affect mortgage priority. In some states, title companies will assume these liens for a consideration.

The issuing company must furnish the surety company with a complete and satisfactory indemnity agreement. The surety is in no sense insuring the issuer of the certificates against loss. In case of default, the surety proceeds as it would against any other principal.

Opinions vary concerning the relation between the face of the guaranty and the amount at risk. The confident expectation of the surety company is that it will seldom if ever have to pay anything like the face value of any single obligation and that salvage will be high. On the other hand it is pointed out that, if the bonding company has to protect itself at a foreclosure, the amount underwritten may be much smaller than what the company has to pay immediately.

It will be seen that what constitutes an acceptable risk may be stated as if it were simple, and that it plainly is not so. It is well known that competent and disinterested appraisers of urban property differ widely in their estimates. Even if they agree, it is impossible to say how much they may be influenced by temporary speculation of operators in the market or by the temporary lack of it, and their estimate of future values, even those in the immediate future, might be found to be interestingly wrong. Rents fluctuate, legislatures sometimes interfere, and localities change. Many experts believe that the real estate market is the one market that over a period of time cannot go any way but one. Curiously enough, they could find support for their theory in the writings of economists who are eminently classical.

Although the mortgage business is proverbially safe, it is not impossible to lose money at it. Now that it is coming to interest small investors so widely, any additional safeguards which may be thrown about it seem to be socially desirable.

Those surety companies which have organized separate departments to care for their mortgage guaranty business have chosen men of wide experience in the mortgage field; they maintain close relationships with title companies; they are endeavoring to secure a spread of the risk by two different methods, first, by making a large number of loans in widely scattered cities, and second, by concentration on the issues upon property in specific cities where local conditions are known by experts to be favorable. Guarantees are not made wholesale, but one by one, and frequently the report of any single investigator concerning the issue is a lengthy document. Examination of loans presents all sorts of complications; title insurance is not procurable everywhere, and in certain localities this insurance is not as broad as it is elsewhere, sometimes in consequence of legal decision and sometimes for other reasons. Other forms of insurance may be necessary besides fire and title —wind-storm, flood and tornado for example. Recent changes in statutes affecting mortgagors, or pending statutes may affect the situation. It can be demonstrated that very profitable business has been done with property as a basis now under an excluded class—hotels, for example, and applications are constantly being made for an extension of the business to include such property. Some companies refuse to guarantee construction-loan bonds, while others have found it profitable to do so.

There is evidence that the surety companies interested in the underwriting of mortgage securities are proceeding to develop a technical and highly specialized field which may be very profitable. Should they be successful, no one may say what extensions may be encouraged in the field of suretyship.

Insurance Companies and Accident Prevention

By James S. Kemper
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We have been told that every civilization carries the seeds of its own destruction. One examining the casualty records of our present "mechanical age" can well believe it. The elevator, which whisks us up and down great heights and makes skyscrapers possible; the automobile, which has broken down provincialism and is causing our globe to shrink with such amazing rapidity; the machinery for manufacturing these and the countless other conveniences of our day—all have taken great toll of human life and limb and of property in accidents. But whereas pestilences and the other scourges of bygone civilizations ran their course unchecked, it is heartening to realize that ours is no age of surrender to fate.

Complacency sometimes delays us in getting started, but once we are aroused we get at the cause of our trouble and eradicate it. Witness tuberculosis. There was a time when sages shook their heads over the "white plague" and saw in its fearful ravages the doom brought upon a civilization that had moved indoors and forsaken the open. Then science and common sense came to the rescue. The guilty bacillus was studied and doctors, nurses and the public successfully taught how both to avoid and combat it. The bedroom windows of the world were thrown open. Baseball, golf and other athletics for the masses were popularized. The result has been to dwarf the gigantic menace of that dread disease. There are indications that cancer similarly will be made to succumb.

Movement Toward Accident Prevention

So with the accidental casualties peculiar to this era. Public opinion has been focused upon them, and that means the beginning of the end. Printing press and radio enable public opinion so to marshall its forces that movements of a magnitude that once would have taken centuries now accomplish their purpose in a few years. Public opinion will fashion the necessary tools out of organization, science, business and other present-day forces. Already they can be seen to be taking shape. With them we will succeed in controlling accidental casualties and the proportionate figures will begin to decline from the peak—indeed have begun to do so.

One more word of introduction is necessary before discussing the part of the insurance companies in accident prevention. That word must concern itself with the railroads and with the largest industrial plants, particularly in the steel industry. The force of public opinion and the power of the sequent forces it sets in motion are aptly illustrated in the history of the railroad "Safety First" movement. It can only be touched upon here. An outraged public demanded the end of death-dealing train wrecks. Acceleration of double-tracking, installation of automatic signals and improvement in coach construction ensued. At the same time someone seized the phrase "Safety First" as a banner and applying the methods now so common in "drives" organized railroad employes into committees to curb accidents and started them marching. The results were striking. It is not uncommon now for a huge railroad system to go a year or longer without a passenger-death. The big industries, which had already created safety engineers and begun in a large way to install mechanical safeguards, quickly utilized the employe-organization principle with success. It is a somewhat grotesque fact that the next great heightening of interest in accident prevention should have come as a by-product of the World War with its millions of fatalities abroad, giving rise to the cry to conserve man-power for the essential industries at home. Such was the case, and in the publicity then and since given the subject one may note the emergence of the insurance companies as a dominant factor in accident prevention.

RISE OF INSURANCE COMPANIES

For decades there has been taking place in the great business of insurance an evolution in basic principle. The emphasis has been shifting from indemnity to prevention, so that the prevention of misfortune as well as the mitigation of the effects of misfortune is the recognized goal. With this shift, this altered conception of the fundamental purpose of insurance institutions, it is natural that the insurance companies should be found in the forefront of the national and international movements to minimize the now appalling casualties incident to our "peace-time" industrial and social life.

While general public interest in accident prevention centers upon its humanitarian aspects and while it would be unfair not to say that the activities of the insurance companies in this direction are powerfully motivated by humanitarian considerations, there are other inherent factors that have influenced the companies. These factors apply to all lines of casualty insurance but we will consider, for example, their effect as a stimulus to accident prevention in connection with workmen's compensation insurance in particular. One of them is the fact that it is advantageous for insurance companies to transact business upon a falling loss ratio. This would not necessarily be true if rates could be altered in concurrence with experience, but since that is impossible and since rates cannot well be predicated on the experience for a given period until several years after that period, it behooves the casualty insurance carrier to force the loss ratio down year by year. This calls for accident prevention.

Then there is the urge of rates—of price. Increasing overhead costs and the common impulses that compel growth call for an increasing volume of business. The companies as a whole must make insurance attractive by keeping the rates down or they will not grow as they should. To keep the rates down necessitates keeping the loss ratio down. That in turn means keeping the accidents down by constructive measures of prevention. At this point another powerful influence is brought to bear—Merit Rating.

MERIT RATING SYSTEM

Obviously, it is desirable to permit modification of the rates downward in the case of those risks which are outstandingly good risks, which have consistently favorable loss records, which by one method and another eliminate and reduce the hazards and chances for loss, and to permit modification of the rates upward in the case of those risks of which the reverse is true. To effect this modification justly and properly there has been evolved in the casualty insurance business the system of Merit Rating. This is a general term to cover two specific and distinctive devices—Schedule Rating and Experience Rating.

Schedule Rating is the operation which produces rates higher than the average or manual rates for those risks in which more than the average number of dangerous conditions exist, and which produces rates lower than "manual" for those risks which have reduced the physical hazards by machine guards, other safety devices and plant safety committee organization. But two plants, with similarly guarded machinery and the same number of men, often show a great difference in the number and cost of accidents. So in most states it is now possible, if the plant is big enough, to obtain a further change of rate due to past experience. This is called "Experience Rating."

The rate manuals classify risks according to the relative hazards of the various industries and businesses, and within those classifications further distinguish between occupations of greater or less hazard. Schedule Rating further subdivides or re-classifies the risks which in the regular manual are under a single rate. In two manufacturing plants of like size turning out similar products there may be wide variance in the factors influencing casualties to employes. These factors have been distinctly isolated by the researches conducted by the insurance companies into the vast amount of data they have collected. The researches have shown, for instance, that the sources of accidents covered under workmen's compensation insurance are approximately as follows:

	Per Cent
Elevators	1 5
Power transmission apparatus (gears, belts, shafting, etc.)	1.5
Driving mechanism	1
Point of operation (the part of a machine where the work is actually inserted and maintained in the processes of forming, shaping, stamping, sawing, cutting, etc.)	55
Other moving parts of machines	7
Unclassified insofar as machinery is concerned (preventable if at all by supervision, education, medical attention, etc., rather than by machine guarding, etc.)	34

Going back to our comparison of the two plants, each may have the same number of rip-saws, for instance. However, one may have all of its saws efficiently guarded and the other may have only part of its saws guarded, and those not in the most efficient manner. Further, the one with the better guarding may also have, and the other not have, rigid rules requiring the constant use of the guards provided, means of training new employes in the safe operation of the machines, a plant safety committee and boards for posting safety bulletins. Scheduling of these conditions results in rewarding the better protected plant with a reduction in rates and penalizing the less well-protected one by an increase in rates. Thus a powerful incentive is provided for accident prevention work, the ramifications of which we will discuss later on.

In passing it may be noted that in many cases the rate reward does not in itself ever directly compensate the insured for the expense of the guards and other safety work. Yet he is amply repaid in the by-products of a reduced loss ratio. He is repaid because he has fewer of the incidental losses that follow accidents. He avoids (1) decreased production due to the absence of regular employes; (2) inefficiency of new employes and psychological bad effect of casualties on other employes; (3) labor turnover costs, including training of new employes; (4) increased overhead costs on account of idle machinery and decreased volume of production; and (5) spoilage of material by new employes.

After the factors which enter into Schedule Rating have been given effect, there remains a degree of control over casualties through management, organization, education. Thus, even if the two plants which we mentioned in the foregoing did have identical rates after schedule rating, their respective loss ratios over a period of years might show marked differences. Experience rating takes these facts into consideration. Compensation insurance premiums are figured on the employer's pay-roll. For the purposes of experience rating the proportion that the losses paid bears to the pay-roll is determined. Then by actuarial methods there can be established a revised rate giving credit where good supervision and morale have resulted in an under-average loss ratio, and vice-versa. Schedule rating emphasizes the physical factors that affect accident frequency, but experience rating is influenced also by the moral and psychological ones. Both have given tremendous impetus to the promotion of systematic, organized accident prevention activities. There is no doubt that employers and insurance companies alike would take a lively interest in accident prevention even had merit rating never been introduced, and would be influenced by humanitarian considerations to carry it forward, even though financial considerations were not involved. It is equally true that merit rating has been an important influence in developing accident prevention work by insurance companies to its present scope.

PRESENT SCOPE IN PREVENTION WORK

That scope is amazing from whatever angle it is viewed. It was only forty years ago that the first American casualty company—a mutual in Massachusetts—was organized. That company was the outgrowth of what is generally known as the factory mutual system of insurance. This system, which originated among the cotton mill owners of New England, first inaugurated in this country the theory that loss prevention was equally as important as indemnity. It was natural then that the new mutual casualty company embarking in the then untried field of employers' liability insurance should have adopted as an essential part of its program the inspection and selection of its risks. The innovation occasioned some ridicule at the time. Today the companies have thousands of inspectors, and millions of dollars are spent annually for safety work.

In casualty insurance companies and particularly in those doing a relatively large amount of workmen's compensation insurance business, no department of the organization is considered more important than the inspection and safety department. In addition to the standardized and routine activities of the regular safety inspectors, a compensation carrier may have a variety of other safety enterprises. For instance: Illustrated safety bulletins showing the right and wrong way, safe and unsafe way, to do various jobs are circulated and posted regularly. A central safety committee at the home office of the insurance company regularly studies the accidents that have been reported, to devise ways and means of preventing their recurrence, and supervises the work of similar plant safety committees maintained among the assured's employes.

Magazines are provided for the benefit of employers, illustrating safety devices and guards, describing accidents and telling how they might have been prevented and guiding the employer in the safety education of his employes. Letters are written to foremen and superintendents directly. Badges and other devices are employed to stimulate interest in the safety committees on the part of the employes. Meetings of employes are held, and even meetings to which their families are invited to bring to bear the influence of the home in urging workmen to greater carefulness. At these meetings stereopticon pictures and even motion pictures are shown to illustrate safe and unsafe practices. In a word, to safety education a continuous stream of safety propaganda is devoted and directed. Results are constantly accruing and testify to the success of the efforts. In the campaign, use is made of the most effective devices of modern publicity. Humor and novelty are employed. If they are justified in selling shoes and breakfast food, why not in saving lives?

If in the foregoing the vitally important subject of machine guarding is apparently dismissed with undue celerity and the emphasis apparently placed too strongly on the educational side of accident prevention, reminder may be given in explanation that in the movement for industrial safety, the first point of attack was the unguarded machine and other hazards susceptible to guarding. That was natural and proper. These were the obvious causes of accidents; the causes could be removed and the accidents could be prevented. It has been done to a considerable degree. Lives, limbs and property of incalculable worth have been saved. But still accidents continue. Why? Because there is a second line of trenches to be taken. In it are carelessness, heedlessness and thoughtlessness—the human element. The human element will always be there, but it can and will be educated so that accidents due to this cause will be minimized.

In studying "preventable accidents" over a period of years, we have seen the percentage of accidents that could have been mechanically guarded against decrease and the percentage preventable by care increase strikingly. An example of prevailing conditions is found in a recent study of accidents reported during a year in a certain state by ten lumbermen who are workmen's compensation insurance policyholders. Of 630 accidents only 129 were in connection with machinery. The remaining 501 included 146 while handling material, eighty-eight splinters, seventy-five from falling objects, sixty-five cases of slipping and falling, forty-eight injuries from nails, twenty-one from hand tools and so on—most of them preventable by care.

While workmen's compensation insurance and the related employers' liability line afford the most conspicuous field for accident prevention work on the part of insurance companies, other lines of casualty insurance are not lacking in interest in this regard. For instance, there is public liability insurance, affording indemnity against loss because of damages received by the public for accidental injury or death. In the case of manufacturers and builders, pedestrians must be protected against falling objects, obstacles in the shape of material piles, and conveying, hoisting and other machinery. In stores, theatres and other public places the safety work emphasizes the need for adequate exits, protection against fire and similar precautions.

In such lines as steam boiler, flywheel, engine-breakdown and elevator insurance, it is noteworthy that the accident prevention and inspection work is actually regarded by the policyholders as of primary importance and the indemnity secondary. Inspection work of this kind carries grave responsibility and requires uncommon ability. For it the insurance companies have developed specialists on whom the policyholder depends to determine, for example, the pressure a boiler will safely stand or the load an elevator will safely carry.

In two of the most important branches of casualty insurance, the problems of accident prevention are quite different from those in workmen's compensation and the other lines we have discussed. These two are personal accident and automobile insurance. In them the approach is very difficult. Here it is that the whole general public must be educated. In personal accident insurance some progress can be made with letters and bulletins by calling the attention of individual policyholders in a striking way to outstanding hazards. As yet the companies having a large volume of this class of business have not emulated the huge life insurance companies that have boldly—and successfully—undertaken in periodical advertisements, reinforced with booklets and other printed matter, to prolong the life of the public in general by teaching lessons of hygiene and right living. Some of this propaganda is directed against causes of accidental death and so is helpful to the companies that carry accident insurance. The loss prevention work of the fire insurance companies also is of advantage to the casualty insurance companies, in that prevention of fire may mean also prevention of loss of life by fire and panic.

Automobile accident prevention is a tremendous problem of great public interest. Despite the difficulties of approach, the problem is being vigorously grappled with, and in the struggle the insurance companies have a prominent place. No small amount of inspection and educational work is directed to policyholders, particularly those with "fleets" of automobiles and trucks. Letters and posters call attention to hazards and illustrate safe and unsafe driving. Bulletins are put up in garages. Drivers are instructed in classes and provided with manuals teaching them the methods of safe operation of motor vehicles. Much of the advertising of the automobile insurance companies couples accident prevention appeal with "sales talk."

The problem of street and highway accidents is one that is engaging the attention of leaders in many other lines of endeavor as well as in the insurance world. Countless municipal, city, state and even national bodies have been created to cope with automobile accidents and devise ways and means of preventing them. Among these is the National Conference on Street and Highway Safety brought into being by the Secretary of Commerce. Its chief accomplishment is the so-called Uniform Vehicle Code of Laws governing motor vehicle licensing, registration and operation. This code is intended for enactment in all the states of the Union. In it are combined the best features from numerous state and municipal codes. The selection was made after many meetings and exhaustive study by committees included in whose membership were the leading experts of the country in all matters affecting the operation, maintenance and use of motor vehicles. Without doubt the present relatively lax observance of rules and regulations affecting motorists in no small measure arises from the confusion of laws in adjoining municipalities and states, making their enforcement exceedingly difficult. It can scarcely be doubted that the widespread enactment of the Uniform Vehicle Code, with its wisely chosen provisions, capable of consistent enforcement, will force sharp reductions in our national automobile accident ratios—by enabling tourists to know and obey the law wherever they may be; by depriving incapable, reckless and criminal drivers of the right to drive; by eliminating speeding.

WHAT MASSACHUSETTS IS DOING

As this is written an interesting experiment in legislation is commencing in Massachusetts where a so-called "Compulsory Automobile Insurance Law" has become effective. In that state no one can get an automobile license who has not guaranteed his liability for damages on account of personal injury or death of others. Proponents of legislation of this type believe that it will incidentally have the effect of preventing accidents. Opponents point out that there seems to be reason to believe that compulsory automobile insurance may increase rather than decrease accidents. Of the limited world experience available the Swiss is probably the most comprehensive. The one outstanding indication with respect to compulsory automobile insurance in that country is that it has considerably increased the number of accidents. It cannot be presumed that compulsory automobile insurance will tend to make drivers more careful, indeed the reverse is highly probable. Compulsory automobile insurance will have no effect on accidents caused by pedestrians, and careful investigation has disclosed that pedestrians are responsible for nearly as many accidents as automobile drivers. Compulsory automobile insurance may through the operation of the insurance policy cancellation feature operate to deprive the careless and reckless driver of the use of the highways. It is a new experiment in legislation. Time alone will determine its advantages and disadvantages as a means of accident prevention.

CONCERTED ACTION

Unquestionably, accident prevention both industrial and as applied to our streets and highways is one of our great national problems. As such it is worthy of our most intelligent study. Tremendous strides have been made in the past decade in efforts looking toward a solution of the question. While insurance companies were probably the first to realize the seriousness of the situation and still are in the forefront from the standpoint of financial contributions, it is significant that today civic leaders in every line are lending their efforts toward a diminution of our accident toll. It is inconceivable that with unanimity of purpose and effort and conscientious attention by these great forces a substantial improvement in the situation cannot be attained.

Modern Trends in Accident and Health Insurance

By Austin J. Lilly, LL.B.[1]

General Counsel, Maryland Casualty Company; Fellow Insurance Institute of America

THE development and progress of Accident and Health Insurance is a story of human ingenuity in conflict with a stubborn insurance principle. The principle has not changed. It is as grimly present today as it was two centuries ago when the Friendly Societies of England and the Continental Trade Guilds sought not unsuccessfully to solve the problem by surrounding the right to benefits with traditional caste and occupational checks and balances. It is as grimly present today as it was a century thereafter, when the Accidental Death Insurance Company of London learned that an allowance of "ten pounds for medical attendance during injury" did not, as was fondly expected, expedite recoveries, with resultant savings to the Company, but rather was played against the Company by the physician to increase his fees, and by the policyholder to increase the duration of weekly payments; and when the enterprising but not particularly scientific health and accident companies organized in Pennsylvania, Massachusetts and New Jersey learned that unguarded risk selection plays havoc with calculations based merely upon the general law of averages. It is as grimly present today as it was in the sixties, when the limited and guarded accident coverages, and in the nineties, when the still more limited and guarded health coverages first laid the real foundation for today's diversified insurances; and as it will be until the trumpet of the Angel Gabriel shall render insurance principles, and coverages more or less adapted thereto, equally vain.

We can never entirely hope to circumvent the fact that insurance, if it is to be within the financial reach of the person whose lack of financial solidity and stability is largely the justification for its purchase, if it is to be satisfactory to him when it shall have been purchased, if it is to be reasonably profitable to the company which sells it, *must be calculated* inter alia *upon a hazard which is susceptible under every aspect, and in its totality, of approximately accurate mathematical calculation!* That the disability hazard under accident policies, under health policies, and under combination policies is not *in esse* and *per se* so calculable, accounts in part for the discrepancy between annual life insurance premiums of some two and one-half billion dollars and annual accident and health premiums of some thirty million dollars,—a discrepancy which becomes the more astounding with a realization that the average occurrence of disability in ratio to insurable population is tremendously higher than the average occurrence of deaths in any given year. The difference lies in the ease and success of the adaptation of the insurance to the controlling principle in the one case and the difficulty of adaptation in the other, and is a most practical exemplification of the aphorism that figures (when they can be had) do not lie, and, by reversion, of the contrary tendency of human nature in possession of an insurance policy upon which there is a claim of variable value.

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[1] The writer desires to acknowledge his indebtedness to Mr F. L. Templeman, Manager, Accident & Health Department, Maryland Casualty Company, for constructive criticism and other valuable assistance in the preparation of this article.

MODERN TREND

Out of the never-ending conflict with this principle has come the series of adjustments and readjustments which constitute the chronological saga of accident and health insurance, which show a constant progress not relatively equalled by the progress in any other line, and which speak for a future continuity in development to a state much nearer perfection than could have seemed possible to the weary but never disheartened workers of forty or even thirty or even twenty years ago.

The modern trend is unquestionably a trend of progress. We have come a long way from the hesitant tentative of the first English company which so bravely relied upon the curative virtues of a medical allowance; and that is but seventy-five years behind us. We have come further and much faster from the rider covering some eight or more diseases issued as an endorsement to an accident policy which blazed the trail to our present forms, and that is little more than thirty years behind us. And, incidentally, while life premiums and health and accident premiums stand in the ratio of more than $80 to $1, the *ratio of increase in the past ten years* is in favor of the latter by two to one.

The modern trend is unquestionably a trend of adaptability. Willingly, through innate wisdom, or unwillingly, through pressure of competition, all forces are working to the end that the needs of the policyholder shall be adequately served. The end is not yet, but there is an end which will serve both the companies and the assured; and, perhaps gropingly, but always determinedly, we are working toward it.

The modern trend is a trend of simplification and certainty. Simplification in policy forms; certainty in benefits; an unhesitating determination to provide a dollar's worth, to deliver the dollar's worth, and to collect the dollar. Adaptability, simplification and certainty, summed up in "progress," sufficiently serve to epitomize the modern trend and to indicate its underlying soundness and vitality.

This process of growth by adjustment and readjustment has manifested itself in many apparently trivial and unrelated details, the sum of all of which, however, is impressive; and one or two of which, as for instance, life indemnity and the noncancellable policy, are really of outstanding significance.

EXPERIMENTS

When, years ago, it became obvious that insurance against accidental death and against disability resulting from accidental injury and sickness was a needed and marketable commodity, it soon became equally obvious that in devising, marketing and complying with the essential coverages—which, after all, in themselves were relatively simple—conditions existed which had not been thoroughly or at all anticipated and allowed for, and which were, in those days of the beginning, perhaps, not susceptible of complete anticipation. The insurance companies found it easier to propose than to dispose. In course of time, with better organization, as experience became available on a wider and wider basis, and more thorough and practical statistics were compiled, the unfavorable conditions were better understood and better guarded against. But the fact remained, and remains today, that after the happening of the initial event, the accident or the sickness which brings the disability coverage of the policy into play, the ultimate outcome —the ultimate payment—the ultimate loss—depends upon the moral stamina as much as upon the physical qualities and condition of the assured; depends upon the skill, knowledge and integrity of attending physicians; depends upon the promptness and co-operation of the assured with respect to treatment, and upon other like factors, which need not be the same in any two otherwise similar cases, and which, as they vary, affect beyond possibility of scientific check or *ex post facto* control, the fortunes of the company. These varying and variable conditions and possibilities have tremendously influenced and have seriously retarded the growth of the business.

Recurring again to the classic instance above cited of the London Company's provision of ten pounds for medical fees: upon every reasonable theory that provision should have operated to the physical benefit of the assured and to the financial benefit of the Company; perhaps it did operate to the physical benefit of the assured, but not to his moral benefit and not to the Company's financial benefit, but the contrary. As a consequence, it was abandoned. Years later, when the companies were better organized for the selection of risks, for the control of medical attendance, and for the investigation and adjustment of claims, the factors of physical benefit to the assured and financial benefit to the company took on an added value and importance outweighing the deterrent factors; and the medical fees were restored to the policy, and others, such as hospital and nurses fees and the like, were added thereto.

But in the meantime, the factors of uncertainty, the ultimate extent and effect of which were within the control of the assured and not of the company, were still affecting the development of the various lines. The problems thereby presented were solved by one company in one way, by another company in a different way; substantial benefits were provided under the insuring clause, so-called, of the policy, and, as therein provided, were in the conditions and exceptions so hedged about with limitations, so qualified, as in almost every instance to be diminished and in some to be aborted. Conditions were such that it required a combination of the talents and skill of a grammarian, of a lawyer, and of a physician, to determine in advance just what the policy offered under any given condition. And even so, the guess of one expert was as good as the guess of another; added to which, in instances and by certain companies, efforts were made to handle the situation before the loss by a sliding scale of premiums; and by others, after the loss, by close and, in some instances, shady processes of adjustment.

Nevertheless, here and there, underwriters of outstanding ability, of sound vision, and the courage of their convictions, were experimenting with extensions of coverage and the effect of scientific and consistent risk selection and adequate and informed claim adjustments upon the deterrent and otherwise uncontrollable factors, and gradually the accident policy was extended to cover practically every character of accident with limitations directed only to the effect of pre-existing, concurrent, or subsequent bodily diseases or infirmities upon the extent or duration of disability; and the health policy, from the half dozen or more of specific diseases first covered to a general coverage, subject only to limitations directed to pre-existing and existing physical conditions.

STATE ACTION

During this period, the insurance departments of the states had been awakening gradually to the existing turmoil and confusion, the resultant variances in court decisions, in treatment of policyholders, the ensuing unhappiness of the companies, and the more or less general dissatisfaction upon the part of the insuring public. Accordingly, upon the basis of the standards set by the more advanced and enterprising companies, the states began to enact the so-called standard provisions law, the effect of which was to reduce to some degree of uniformity, at least, the operation of the various coverages and to protect policyholders in the more fundamental of their rights. And in due course, some twenty-eight of the states have adopted essentially similar standard provisions laws. The standard provisions, however, while serving a valuable end, tended rather to affect, regulate and secure the rights of the policyholder after the event of loss than to assure him a basic, satisfactory coverage. With respect to the formulation of the basic coverage, the companies have been left to follow pretty much their own devices. It may be said with reasonable pride that they have been by no means remiss in the performance of what amounts to a vital duty. Policy provisions have been simplified and clarified to a point where the contract, though perhaps longer than in its earlier forms, is very much clearer and does actually deliver, when the occasion arises, a pre-understandable and an easily determinable benefit. Adjustments are made with admirable consistency upon the established basis and to the satisfaction of the policyholder. As conditions which, in the earlier stages were necessary for the protection of the company, have been found in view of better knowledge and sounder and broader facilities of a later day to have become unnecessary for the company and unduly burdensome to the assured, they have been revised or abandoned.

CONDITIONS OF DISABILITY

An outstanding instance is the heretofore well nigh universal prerequisite of house-confinement as a condition for the payment of total disability benefits under both accident and health policies. At one time, that was considered to be almost the only certain, open and visible test of total disability, and perhaps it then was. But experience showed that it did not always protect the companies against the dishonest policyholder; that it was in many instances unfair to the honest policyholder; and, accordingly, that it was neither an accurate nor an infallible measure of total disability. Sentiment upon this point has now apparently crystallized; and, while house-confinement is still a useful test in certain instances, and is retained for the special and low-priced coverages in which it serves an economic purpose, its use as a universally essential limitation is believed to have been finally abandoned.

There has been a somewhat similar history with respect to the once rigid requirement of immediate, total and continuous disability as a condition precedent to the payment of specific benefits; and the representative policies are today more liberal in this respect. The period within which the specific loss, or the death, must occur, is gradually being lengthened without regard to the intervening disability; and the provisions indicate a praiseworthy effort to make the policy as elastic and responsive to variable conditions as ordinary prudence, based upon the story of experience, will permit.

It is interesting to note the effect upon the business of the fact that the accident policy was primarily designed to cover the loss resulting from extraordinary hazards, as for instance the railroad ticket policy with which the one great company which has been operating continuously since 1863 entered the field. As the policies were in due course extended to cover all classes of accident, the special hazard of travel seemed to have lost its significance. So real a need and so tremendous a talking point were not, however, to be always overlooked, and some thirty years later, in 1895, or thereabouts, the original principle was again discovered and applied by the expedient of doubling the benefit for death and disability resulting from travel upon certain classes of public conveyance. Recent years have seen an extension of the additional benefits to accidents occurring in public buildings, during fires, and the like, with, indeed, a provision for triple benefits in certain cases; have seen also the development of special forms for the extra hazards of daily existence under the strains and stresses of modern civilization; and the now widespread use of the identification provision, under which the companies pay, usually within a limit of $100, the expense necessary in case of accident, to transmit information, and to place the assured in the hands of his family or his friends. While this is past and present history, it is none the less indicative of ever-present seeds of growth which will germinate as occasion requires, and upon which the future may be predicated.

The waiting period, as a period of disability precedent to payment of benefits, has again become a factor of importance, as a check or control upon other factors which are in and of themselves not readily controllable. Apparently by way of being abandoned, it has again manifested its vital force. It is a device by means of which better insurance may be provided at a lower rate; it is an obvious aid in the difficult process of risk selection under health coverages; and it is a *sine qua non* of sickness benefits under the life indemnity and noncancellable forms.

COVERAGE AND INDEMNITY BASES

Opinion and treatment of the character of accident upon which accident-benefit coverage shall be based is still in a state of flux. The original policies covered, more or less, death or disability resulting from "personal injury by accident." The courts, in their immediate and eager application of the rule that a contract, if it be for construction at all, is to be construed against that one of the parties thereto which dictated its content and terms, early showed the companies that they had inadvertently covered too much ground. There followed an effort to so define, limit and circumscribe the word "accident" as to hold the coverage within the scope of its primary intent; and out of that effort has grown the great bulk of accident insurance litigation. The device of limitation which best withstood attack was found in the cover-phrase,—"accidental bodily injuries effected independently and exclusively of all other causes through external, violent and accidental means." Under such a clause it is indeed difficult to recover for any event which is not in fact and in truth an "accident." No more effective phrase has been invented. And in the early days such a limitation was an utter necessity. Slowly, however, it was realized that, with careful basic underwriting, intelligent risk selection, and competent adjustment, the rigor of the clause might perhaps be somewhat abated, at least in the forms of comprehensive coverage and universal appeal; and here and there the ocular and demonstrable proofs (proofs independent of results) established by the words "violent" and "external" were abandoned, and, again, the tests of pure accident, established by the words, "independently and exclusively of all other causes"; so that there are many forms which now cover "bodily injuries effected independently and exclusively of all other causes directly through accidental means," and some which cover "accidental bodily injuries," the coverages, of course, including resultant death. It is too early to predict the ultimate development in this direction. The elimination of unduly restrictive qualification upon coverage is an end devoutly to be sought. But, after all, the fundamental line between the results of accident on the one hand, and upon the other, of accident and disease, or of disease alone, must be observed so long as there are separate or even different benefits provided for the respective disabilities. And, inasmuch as the division seems to be as fundamental as the demarcation, and the need for separate coverages inherent in the business, it would indeed be a temerarious assault upon the prophetic verities to predict any further immediate appreciable advance along this line.

The ultimate treatment of the accumulated benefit is likewise a matter of uncertainty. Devised as a means to provide the assured with a substantial interest in the continuance and renewal of his policy, it developed the rather natural evil, that upon any renewal date the policy might be placed in another company and by it endorsed to provide the sum of the earned accumulation, so that the transfer would cost the policyholder no additional benefits, the right to which had accrued under the policy. In some states the very valid objection was urged to this proceedings that it constituted discrimination and rebate; and departmental effort was made, here and there, to force a discontinuance of accumulations. While this was not successful, it resulted, upon the part of many of the companies, in the addition of the full accumulation to the face of the policy as of date of issuance. In some forms, generally, and by some companies for special forms, the original plan is still followed. The part it plays in the scientific scheme of accident and health insurance is perhaps of questionable value, and probably the future will not be greatly concerned with it.

The vitality of the business, its universal appeal, and its economic possibilities are indicated by the adaptation of many of its principles by the leading life companies for use in connection with life insurance, as exemplified by provision for double benefits in event of accidental death, period payments in event of total disability, and acquittal of liability for further premiums under like conditions. And upon this point, the furore created by various newspapers of national reputation, in the sale of restricted policies as an incident to term subscriptions, is not without interest. While sporadic and perhaps insignificant considered as a separate development, the result has been a tremendous advertisement, out of which will grow a future demand. Insurance helps to sell itself. The more insurance the more insurance.

SPECIALIZED INSURANCE COVERAGES

The adaptability and responsiveness of the business is illustrated in the variety of coverages designed for special uses and purposes. Of significance are the special automobile policy, which sells for a premium well within the reach of the entire membership of the insuring public, which covers effectively against the special but ever-present hazard of injury or death through the agency of motor vehicles; and the similar travel accident policy, which covers against the special hazards incidental to traveling. These forms, by virtue of the limited class of accidents covered, are sold practically to all alike, without reference to the ordinary classifications.

Of perhaps even greater future importance is the deferred payment policy which is adapted to meet conditions arising upon the unparalleled extension of credit purchases on the instalment basis. This coverage is designed to protect the purchaser upon credit in the periodical payments, which his contract of purchase compels him to make, and which, by reason of loss of income from accident or sickness, he may be unable to make. Designed to relate solely to the protection of deferred payments, it is narrower in scope as respects period of coverage and duration of payments than the ordinary policy, and hence can be sold at a greatly reduced premium, but nevertheless serves exactly and adequately the purpose of the purchaser. Used first in connection with the purchase of automobiles, it has gradually been extended to cover all important classes of deferred payment. In this category likewise belongs the group accident and health policy, which has been developed to a point where it is adaptable to almost every necessary use and purpose; which simplifies the sale of such insurance, tends to place it where it is most needed, and to reflect in a reduced premium the savings effected to the companies by what is, after all, a form of wholesale insurance. Experiment is being made with similar special forms for hospital and nurses' benefits, which promise to supply a definite need.

RESPONSIVE DIVERSITY IN FORMS

The development of newer, broader and specialized coverages by no means implies an abandonment, present or future, of the older and narrower forms. On the contrary, these are being retained to serve the purpose of that portion of the insuring public whose needs, indeed whose very whims, they may more satisfactorily supply. Today, then, from the one company, here and there (though not from all companies, the development has not yet reached that stage), the citizen may purchase a disability, an accident, or a health policy, providing, as he may desire, variant tests of total disability: such as house-confinement, inability to perform any of the duties of his occupation, or inability to perform the duties of any occupation whatsoever; policies which provide for fifty-two weeks' indemnity, or 200 weeks', or life indemnity at the full rate of weekly benefits, or at full benefits for a period and thereafter at a percentage of full benefits for life; policies with a waiting period of total disability antecedent to the payment of benefits and policies without such antecedent period; policies which indemnify for loss of time only, or for loss of life only, or providing a reasonable scale of variants in either or both classes of indemnity; policies which cover against any and all disability from special hazards; policies which cover against certain losses from any and all hazards; policies the benefits under which are to secure the payment of contractual obligations; policies which cover against all hazards except those produced by deliberate intent of the assured, including even the hazard of aviation; policies which provide special additional benefits; policies which provide optional benefits to facilitate the determination of what might otherwise constitute vexatious problems of disability; policies which are noncancellable. In all of these the relative differences and distinctions are adequately recognized and compensated for in the premium basis, the age basis, the occupational basis, or by controlling underwriting, and policy conditions and limitations, as may be requisite. A field of selection which is, indeed, as varied as the human need for such insurance; and which will unquestionably be extended as additional needs develop.

STANDARDIZATION

There is a substantial advantage to the public in the diversified choice of available coverages; and there is also a disadvantage inherent in the diversity itself, in that proper and adequate coverage, though readily available, is not always sold, and that policyholders do not always know the effect and extent of the coverage purchased. This has resulted not infrequently in troublesome adjustments and general dissatisfaction. The fear that under the circumstances, human nature, politically expressed, would seek to foster and impose the theoretical ideal of a *standard form*, was realized not long ago in the action of the insurance department of a western state, which sought upon the authority of the statute prescribing the standard provisions, and by virtue of alleged evils growing out of "the multiplicity and variety of health and accident policy forms and the different conceptions of the rights of claimants manifest in claim settlements," to compel the issuance by all companies in the state of a standard form embodying the ideas unsuccessfully urged by the department for years prior thereto, which related in the main to indemnities, and which sought in effect to eliminate the payment of valued benefits based upon the condition of house-confinement or disability, continuous or otherwise, or for specific losses as of a hand, a foot, of sight or hearing, and to substitute therefor indemnities for actual loss sustained,—specifically for loss of life, for loss of time, and for loss other than loss of time (which would have resulted in the scrapping of practically every present form of policy); to compel coverage of all hazards except those specifically excepted (which would have resulted in the complete elimination of the special automobile, travel accident, and similar forms); to abolish accumulations; and to abolish the use of renewal receipts. The department opened hostilities by an announcement on October 23, 1923, that on and after March 1, 1924, no company which refused to comply with the order for the issuance of the proposed standard form could procure the renewal of its license. At this frontal attack upon the entire theory and concept of the structure of accident and health insurance, the companies sought the aid of the courts, and procured an injunction, restraining the commissioner from refusing to renew the licenses, and in the case of *State ex rel Time Insurance Company et al.* vs. *Smith, State Commissioner of Insurance,*[1] were completely successful in their resistance to the order, and in establishing, let it be hoped once for all, that freedom of contract in insurance, subject only to reasonable and explicit state regulation, which is still a part of our constitutional heritage.

Nevertheless, there is a significance in the effort, however unsuccessful, of the Wisconsin department to force upon the companies a standard form. It is symptomatic of what is perhaps more a desire than a need, but even so, of a desire widespread and genuine. And the future may hold for us, if not a standard form as such, at least some certain and definite unified coverage, under a standard name which, wherever and by whatsoever company sold, will carry with it the almost universally standard values found now in automobile, liability, life and fire policies. That the question is of interest and importance is indicated by the action of the Health and Accident Underwriters' Conference in appointing a committee to determine upon definite recommendations for uniform phraseology of the more important policy-provisions. It remains, however, that the ends to be served by accident and health insurance are so varied and various as compared with any other class, that such a standard form must, unless the interests of the insuring public are actually to be disserved by it, be but one of many coverages, the number of which, experience teaches us, will in the future increase rather than diminish.

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[1] (Wis.) 200 N. W. 65.

LIFE INDEMNITY AND THE NON-CANCELLABLE FORM

The progress of the business in the two outstanding developments of modern times, life indemnity and the noncancellable contract, is being hampered, the first by the courts, and both by the effect thereon of the great principle of insurance herein before adverted to.

If the decision of the Circuit Court of Appeals of the Sixth Circuit (upon appeal from the District Court for the Middle District of Tennessee) in the case of *Federal Life Insurance Company* vs. *Rascoe*,[2] which the Supreme Court of the United States refused to review upon writ of certiorari, is to stand as the ultimate law regulating the assured's right to the recovery of disputed benefits in permanent total disability cases, the day of life indemnity, whether for disability resulting from accident or sickness, is over. In that case, upon the sole issue, from the company's standpoint, that the assured's disability, and consequent right to benefits under the policy, had terminated, an action was successfully maintained by the assured, not for the recovery of benefits as such, but for damages as for the breach of the entire contract of insurance, the measure of which should be the assured's life expectancy under the standard life tables admissible in that court. Upon a policy paying life indemnity at the rate of $25 per week, the assured recovered a lump sum verdict of $21,518.98. A study of the opinion of the court and of the vigorous dissenting opinion filed by one of the Circuit Judges, indicates that the case, although one of first impression, need not necessarily serve as a precedent in future cases.

In general, the experience with life indemnity for disability resulting from sickness, has been unfavorable in the extreme; so that the tendency is rather to revert to the long established limit of fifty-two weeks for ordinary use, with an occasional form providing for two hundred weeks. Accident life indemnity is more satisfactory and is believed to have come to stay.

Experience with the noncancellable form has been still more unfortunate. Promising, as it did, a solution of one of the most vexatious problems in the business; offering perhaps the only means of raising it to the sound and adequate plane of life insurance, the noncancellable form has unquestionably been a bitter disappointment to the business at large. For this there are many reasons, perhaps none of which will be found in the long run to be either permanent or insurmountable. The cost is high, which intensifies the tendency of the undesirable risk to seek the coverage, and thus operates to increase the difficulty of proper risk selection. Non-cancellable business in general, by virtue of the medical examination, the commission basis, agency relations, etc., ramifies rather into the structure and organization of life than of casualty insurance, which well accounts for the fact that its transaction is now confined mainly to the life companies; and with the general difficulties inherent in the line, accounts also for the fact that even of the life companies only a small number are actively interested. Reserves have been a serious stumbling block, but official steps are now being taken toward simplification and reasonableness. Over the whole is the chilling factor of uncertainty born of lack of definite statistical and underwriting experience.

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[2] Reported in 12 F. (2d) 693.

IN SUMMARY

Notwithstanding which, reading the future by the past, it is not too much to hope that this desirable and widely needed form, the advent of which was prophesied by leaders in the business years ago, will gradually, through a series of necessary mutations, come into its own and stand thenceforth as the flower and pride of accident and health insurance.

Since the enactment of the standard provisions, and aside from the effort of Wisconsin in the matter of the standard form, and minor attempts upon the part of one or two other states to read the laws as statutes of rigid limitation rather than of helpful regulation, the departments have been co-operative and the companies have been given a free hand in the solution of their troubles, in the correcting of the occasional evil, and in the rational expansion of the business quantitatively and qualitatively as well. They have been alive to the possibilities and keen to procure their realization.

When all is said and done, the modern trend is a consistent trend of progress and adaptability. Through competition of companies, intelligent reaction in the conflict with immutable human and economic principles, decisions favorable and adverse of our various courts of last resort, and the extension of the old and development of new possibilities, has come about an adjustment and readjustment of policies in their various component parts and of properly reflective coverages which is not now, no more than a decade or a half century ago, indicative of a fixed status, but rather of a healthy and continuous growth, and which augurs well for the ultimate establishment of the line as one of the greatest in the insurance field.

Automobile Insurance

By H. P. STELLWAGEN

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IN a little more than twenty-five years automobile insurance has developed from an insignificant side line to a coverage of the first importance to both fire and casualty companies.

Automobile insurance came into being to meet a definite need, namely, the need of the motorist for protection against financial loss arising from the ownership and operation of an automobile. The automobile, when set in motion, is a potentially dangerous instrument, capable of inflicting personal injury, and death, and property damage. Furthermore, the automobile, like other property, may be damaged or destroyed by fire and by action of the elements. Being movable, it may be lost through theft, or damaged, or destroyed by impact with another object either moving or stationary.

AUTOMOBILE HAZARDS

A brief consideration of the automobile hazards as they exist at the present time indicates that automobile insurance is a greater need today than ever in its history. During 1926, approximately 23,500 people were killed in automobile accidents, and 700,000 injured. In the same year, there were more than 2,000,000 automobile accidents involving property damage. This tremendous loss of life and limb in automobile accidents is particularly distressing from the humanitarian and social standpoint, and is a direct challenge to the conservational and accident preventative ability of the United States. From the economical standpoint the situation is a serious one, because the law holds each man responsible for his own acts, and if it can be shown that injury, or death, or property damage is caused by the negligence of the motorist and that the individual injured in person or property or killed was not guilty of contributory negligence, then the motorist is liable under the law for damages commensurate with the injury inflicted. A conservative estimate shows that the motorists of the United States suffer, annually, a loss of $350,000,000 as a result of damage suits.

It has been estimated[1] that 60,000 cars are totally destroyed each year by fire and that the monetary loss through fire amounts to $75,000,000. Approximately 100,000 cars are stolen and the total loss through theft—either of the entire car or of its equipment—approximates $90,000,000. Because of the lack of statistical data, the damage caused by collision of automobiles with other objects, moving or stationary, cannot be measured, but the aggregate cost must be considerable.

FIVE PRINCIPAL FORMS OF INSURANCE

There are five principal forms of automobile insurance which collectively protect the motorist against all the hazards enumerated above, namely: Public Liability, Property Damage, Fire, Theft and Collision Insurance.

A policy of *Public Liability* Insurance undertakes to indemnify the motorist (the assured) for loss arising from his legal liability to others for bodily injuries, including death, suffered in any accident due to the ownership, maintenance or use of the automobile insured. Similarly, a *Property Damage* contract indemnifies the motorist for loss by reason of his legal liability to others for damage to or destruction of any property (not his own or in his charge) in an accident due to the ownership, maintenance or use of his automobile.

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[1] By A. J. Donohue, Assistant to the Manager, National Automobile Underwriters' Conference.

Fire and *Theft* Insurance need no description. A *Collision* policy reimburses the motorist for the damage or destruction of his automobile if caused by an accidental collision or impact with another object or by upset.

From the standpoint of the motorist, Public Liability Insurance is most important, because it offers protection against a loss which by its nature is unlimited and which may be of such a size as to engulf all the material possessions of the automobile owner. Fire and Theft Insurance are perhaps next in importance, protecting as they do the capital represented by automotive equipment which in the case of fleets, for example, is considerable. Property Damage Insurance is equally important because, while the damage which an automobile may inflict is usually limited, there often arise severe property damage losses seriously affecting the motorist's solvency. Last in importance is Collision Insurance.

The general importance of insurance and the specific necessity for Public Liability Insurance is evident from the following newspaper article:

HEAVY CLAIMS IN TRUCK CRASHES BANKRUPT BROOKLYN CONCERN

The Monroe Contracting and Supply Company, 272 Monroe Street, Brooklyn, filed a voluntary petition in bankruptcy in the Federal Court, Brooklyn, yesterday, listing liabilities of $221,666, nearly $200,000 of which are judgments for personal injuries obtained by persons struck by the company's trucks. The assets include trucks valued at $20,000 and $500 in other property.

The Company attempted to save money by not carrying liability insurance, it was said, because of the high premiums. A special fund to meet liabilities in accident cases was established, but proved insufficient.

PREMIUM VOLUME

In the year 1925, the automobile premium writings of all companies doing business in the United States was:

Coverage	1925 Premiums Written	Per cent of Total
Public liability.... .	$144,000,141	43.2
Property damage ...	59,273,460	17.8
Fire	46,272,959	13.9
Theft	42,401,760	12.7
Collision...	41,227,998	12.4
	$333,176,318	100.0

The future development of the business may be visualized when it is remembered that today, of the cars on the road in the United States, only sixteen per cent are insured for Public Liability, thirteen per cent for Property Damage, two per cent for Collision, and perhaps thirty-three and a third per cent to fifty per cent for Fire and Theft.

In only a few states do the laws permit a single company to write all five forms of automobile insurance. In most states, casualty insurance companies are not permitted to write automobile fire insurance and fire insurance companies are not permitted to give automobile public liability coverage. In actual practice most of the property damage insurance is written in conjunction with public liability insurance in casualty companies. Fire and Theft are usually combined in one contract issued by the fire companies. Collision Insurance is often provided by rider or endorsement attached to the basic public liability or fire contract, and the collision business is about equally divided between the fire and casualty companies.

THE POLICY CONTRACT

The policy contract is an important document It sets forth the insuring agreement, the conditions, limitations and exclusions to which that agreement is subject, and the declarations upon which the risk is classified and rated and upon which the whole contract is predicated.

The public liability and property damage contracts are alike in that they are both third-party liability coverages. That is to say, the insurance company (party of the first part) agrees to indemnify the policyholder (party of the second part), for loss arising in connection with accidents involving—not his own person or property—but the person and property of *another* (party of the third part). Fire, theft and collision contracts, on the other hand, are direct two-party agreements whereby the insurance company reimburses the policyholder for loss of, or damage to, his own automobile.

PUBLIC LIABILITY

The Insuring Agreement.—The insuring agreement in the public liability contract provides that the company will indemnify the policyholder (the assured) against loss from the liability imposed upon him by law for damages on account of bodily injury, including death at any time resulting therefrom, accidentally suffered by any person or persons as a result of the ownership, maintenance, or use of the automobile described in the policy. In addition the company agrees to defend all suits for damages, even though groundless, to investigate all accidents and negotiate settlements of claims, and to pay all court costs and expenses arising from any legal proceeding defended by the company, all interest accruing after entry of judgment, and all expenses incurred by the assured for immediate surgical relief imperative at the time of the accident.

These agreements apply to all accidents occurring within the United States and Canada during the term of the policy, which is usually one year. The policy does not, however, cover the liability of the assured if the automobile is operated (a) by any person under the age limit fixed by law or under the age of sixteen in any event; (b) in any race or speed contest; (c) for purposes other than those set forth in the declarations. Furthermore, the policy does not cover any liability imposed by a Workmen's Compensation law nor does it cover the assured's liability for injuries suffered by his employes while engaged in the duties of their employment, other than domestic servants who do not operate or care for the assured's automobile.

An important feature of the public liability contract is the so-called Omnibus Coverage clause. The word "omnibus" has in this connection the Latin meaning "for all," and the omnibus clause extends the insuring agreements of the policy so as to apply to any person while riding in or legally operating the automobile described, and to any person, firm or corporation legally responsible for its operation, provided such operation is with the permission of the assured or of an adult member of his household. This clause is not contained in policies covering public passenger carrying vehicles and garages.

The use of the Omnibus Coverage clause is indicative of the later and more liberal view that the insurance should follow the car rather than the individual named in the policy. Today, the policies issued by practically all reputable companies cover all persons and interests (subject of course to the provisions and basic limitations of the policy) liable for the operation of the automobile insured. The use of the Omnibus clause is not entirely universal and it is therefore particularly important that the motorist see to it that his policy contains the broad coverage which that clause affords.

The Bankruptcy and Insolvency clause is another important feature of the policy which has the effect of making it a contract of insurance rather than a contract of indemnity. It provides that the bankruptcy or insolvency of the assured shall not release the insurance company from the payment of loss thereunder, and that if execution against the assured is returned unsatisfied, the injured person, or his personal representative in case of death, may maintain an action against the company for the amount of the judgment obtained

Conditions and Limitations.—The automobile public liability contract contains the usual conditions respecting the co-operation of the assured, prompt notice of accidents, cancellation procedure, inspection and other provisions necessary to the insurance transaction. Certain monetary limits are placed on the liability of the company and these deserve careful consideration.

The contract provides that the liability of the company shall be limited to the sum of $5000 as respects the injury or death of one person and subject to that amount per person to a total of $10,000 for all injuries including death arising from any one accident. These limits of $5000 and $10,000 respectively are known as standard limits and are commonly referred to as "five and ten."

Policies can be and are in a great many cases written for higher or "excess" limits. In fact, over half of the automobile public liability policies issued by the casualty companies in the United States are written for limits of ten and twenty and higher. Verdicts are constantly increasing and the motorist possessed of a fair amount of property needs at least ten and twenty limits if not twenty-five and fifty. The following verdicts recently rendered in connection with automobile accident damage suits indicate that the standard five and ten limits are no longer adequate:

> The Supreme Court of Brooklyn, New York, returned a verdict of $20,000 for William Fallon, a chauffeur whose arm was paralyzed as a result of a collision between his car and the defendant's car.
>
> Miss Helen Mooney was awarded $50,000 damages from the owner of a truck which ran her down inflicting serious permanent injuries.
>
> The Appellate Division of the State of New York sustained a verdict in the sum of $20,138 rendered by a jury in the Supreme Court in favor of Mrs. Grace McGinley in connection with the death of her son who was run down by an automobile.

PROPERTY DAMAGE

The Property Damage contract resembles the Public Liability contract very closely except that it is concerned with damage to or destruction of property instead of personal injury and death. The insuring clause definitely excludes coverage for property of the assured or property in the custody of the assured, property rented or leased, and property carried in or upon the assured's automobile.

The Property Damage policy is written for a limit of $1000 which applies to all damage sustained as the result of a single accident. Here again, insurance may be obtained in amounts greater than the standard limit of $1000.

COLLISION

The Collision Insurance contract indemnifies the automobile owner against the actual loss of or damage to his automobile if caused solely by accidental collision with another object fixed or moving or by upset.

Collision Insurance is written as a full coverage form and as a deductible form. Under the full coverage form, the insurance company undertakes to reimburse the automobile owner for any loss, no matter how slight. Obviously, the premium for this form of insurance is high, because the insurance company is called upon to pay damages for the great number of scratches and dents which the automobile suffers in ordinary operation through traffic.

Under the deductible form of policy each claim is separately adjusted and from the amount of each claim a certain fixed sum is deducted and the insurance company is liable for loss in excess of that amount only. Thus, under a $50 deductible form, the policyholder pays all small losses of $50 and less, and also pays the first $50 on all losses exceeding that figure. The insurance company pays that which remains of the loss after $50 has been deducted. At the present time, the popular deductibles are in the amounts of $50, $100 and $250. The cost of deductible collision insurance, especially on the larger deductibles, is small because the company is obligated to pay only the large losses which ordinarily are a burden on the assured.

FIRE

The Automobile Fire Insurance policy indemnifies the automobile owner for loss or damage to his automobile caused by the perils of fire, lightning and transportation. The insuring agreement provides that the company will pay loss through fire "arising from any cause whatsoever" and further provides reimbursement for the assured in the event that the automobile is damaged or destroyed through the sinking, collision or derailment of any conveyance upon which the automobile is being transported on land or water.

Limitation of Liability.—The form of contract in most general use today is called the "non-valued" form and the company's liability is limited to the actual cash value of the automobile insured at the time loss or damage occurs.

Several years ago, the "valued" form was quite common and under that contract the assured was entitled, in the event of total loss, to all of the fixed sum stated in the policy at its inception date. This "valued" form was discontinued because of the opportunity which it gave to unscrupulous assured to make money under their policies when the value of the automobile at the time of destruction was less than the fixed sum stated in the policy.

The present "non-valued" form usually contains a fixed sum which limits the company's liability in any event, subject always to the actual cash value of the property at the time of its destruction. There has been a growing sentiment, however, to eliminate the fixed sum altogether and to write a "no amount" policy. The adjustment of losses under the "no amount" policy is made on exactly the same basis as under the regular "non-valued" form, but it is contended that the elimination of the fixed amount will obviate much of the unhealthy competition among agents in constantly seeking the naming of higher amounts of insurance in policies. Then, too, the elimination of the amount of insurance will remove the suspicion which formerly obtained in the minds of many assured, who felt that they were being cheated if they obtained less than the amount stated in the policy in the event of total loss.

In certain congested centers of population where the risk of insuring automobiles against the perils of fire is particularly severe, most fire companies have restricted the coverage afforded by the use of the "three-fourths value" clause, whereby the company's liability is limited to an amount not greater than seventy-five per cent of the actual cash value of the automobile at the time of its damage or destruction.

THEFT INSURANCE

The insuring agreement of the Theft contract indemnifies the automobile owner against loss or damage to his automobile through theft, robbery and pilferage.

The standard theft contract does not cover theft by any person in the assured's household or in his service or employment. Furthermore, the contract does not cover the theft, robbery or pilferage of tools or repair equipment except in the case of the theft of the entire automobile. There are certain other exclusions dealing with voluntary parting with title, wrongful conversion by a mortgagor, etc., which should be carefully understood by the policyholder.

The "three-fourths value" clause previously described for fire insurance has its application to theft insurance under extra-hazardous conditions, and the theft coverage may be even further restricted by excluding coverage on motor meters, extra tires, tubes, rims, wheels and extra or ornamental fittings, unless the entire automobile is stolen. The loss arising from the theft of equipment has been so severe that the standard companies have discontinued the writing of the unlimited coverage entirely in some parts of the United States. In other territory policies are usually written on the restricted basis but full coverage is sold for an extra premium.

BASIS OF PREMIUM CHARGES

The rates for all five forms of automobile insurance vary territorially. For example, rates for public liability and property damage insurance are highest in New York City and lowest in the rural districts of the South and West. As might naturally be expected, these territorial rate groups or zones are most numerous for public liability and property damage because of the considerable variation in the traffic hazard throughout the United States and the number of zones is least for fire and theft insurance.

Automobile rates also vary by four main divisions or types of risks. There is a distinct set of rates for cars of the private passenger type, another for commercial cars and trucks, a third for public passenger carrying vehicles, and a fourth for garages and dealers, the last being a type of risk rather than a particular type of vehicle. These four main types are further subdivided into what are known as classifications. For example, cars of the private passenger type are divided, for the purpose of public liability and property damage insurance, into three groups dependent upon the following criteria: horsepower, shipping weight, wheel base, engine displacement and list price. For purposes of collision insurance, the private passenger cars are divided into ten groups reflecting relativity in list price and type of construction, and are further subdivided into "new" cars and "old" cars, "new" cars being defined as cars purchased new not more than six months prior to the date of the attachment of insurance. For fire insurance, cars of the private passenger type are divided into four age groups; for theft, there is no differential for age, and there is a further classification on the basis of the car's susceptibility to the fire and theft hazards.

Cars of the commercial type are subdivided as respects public liability and property damage insurance into classifications depending on the load capacity of the vehicle and the business in which it is used. Cars of the general category of public passenger carrying vehicles are in turn subdivided into the taxicab, private livery, public livery and jitney and bus classifications.

Under certain conditions discounts are allowed from the established rates for the attachment of devices tending to decrease the hazard. For example, a ten per cent reduction from the collision rate is allowed for the attachment of an approved front bumper on private passenger cars, and an additional two and one-half per cent discount is allowed for the attachment of an approved rear bumper. Discounts of fifteen per cent and twenty per cent, dependent upon the nature of the device, are allowed from the theft rate if the automobile is equipped with a locking device. All these devices are tested and approved by the Underwriters' Laboratories, Inc., of Chicago, which acts for a number of the insurance companies as an engineering advisory body.

AUTOMOBILE RATE-MAKING

Automobile rates are developed from the experience, *i.e.* the loss records, of the insurance companies. The rate-making activities of the stock companies are centered in the National Bureau of Casualty and Surety Underwriters, and the National Automobile Underwriters Conference. The National Bureau develops public liability rates; the National Conference fire and theft rates, and these organizations cooperate as respects property damage and collision.

The individual companies, members of these organizations, keep detailed records of cars insured, premiums collected, and the losses paid on the business which they individually insure, and the data of all companies are submitted to the national organizations for compilation and analysis. By a system of cost analysis, it is possible to ascertain the cost of insuring automobiles against the various hazards in particular communities and in particular classifications. This analysis goes into great refinement, especially for the casualty coverages. Under the system used by the casualty companies, for example, it is possible to ascertain the cost of insuring automobiles in each of two hundred and fifty or more territories.

The rate for automobile insurance, like the rate for other kinds of insurance, is made up of two elements: first, a loss element which is ascertained from the loss experience of the companies; and second, an expense element which is obtained from the accounting records of the companies and shows the cost of doing business. A moderate factor for underwriting profit is included with the expense loading.

As the science of rate-making has advanced, automobile rates more and more reflect the actual conditions of a particular community which make for the hazards against which insurance is provided. The public liability rates, for example, are an index of the frequency of personal injury accidents in relation to the cars on the road in different cities and states. This fact is of considerable public importance because it indicates that the individual community may, in a sense, control its own insurance rate by taking such measures as will reduce the frequency of accidents in relation to the insured automobiles.

EXPERIENCE RATING

Experience rating is made available to the owners of fleets of ten or more automobiles insured for at least two years in connection with automobile public liability and property damage insurance. Experience rating may be defined as a mathematical process of determining the departure of the individual risk experience from the experience of the classification into which it has been placed for rating purposes, and of recognizing that departure by a credit if the individual risk experience is better than the classification experience, or by a debit if the individual experience is worse than the average experience.

In other words, if the individual fleet operator, by the employment of careful, responsible operators, by the use of proper equipment, and by the exercise of eternal vigilance, succeeds in cutting down his accidents so that his individual record is better than that of a majority of the risks in his classification, he may be rewarded for his activity by a discount from the base or manual rate for his insurance. Conversely, bad risks, which, through mismanagement and carelessness, produce an unfavorable loss record, are penalized by the application of a debit or charge to their basic insurance rate. Quite obviously, the experience rating plan puts a premium on carefulness.

Individual fire and theft rates are also developed for eligible fleets of automobiles, but the experience of the risk is only one of several elements taken into account in the development of rates.

PRESENT AND FUTURE PROBLEMS

One of the chief problems confronting the insurance companies today is the problem of the moral hazard. The moral hazard is difficult to define, but it embraces the intangible human frailties and propensities which cannot be measured by any rating system and which cannot be accounted for in advance by a requisite premium charge. The presence of the moral hazard in fire insurance led to the abolition of the "valued" fire contract. The presence of the moral hazard in connection with collision insurance has made the full coverage form generally unprofitable, so that its elimination has been seriously considered by the underwriters.

In recent years a new element has been added to the moral hazard inherent in the writing of automobile public liability insurance, and that element is commonly known as the "guest" hazard. Close friends of the assured, in fact his immediate relatives, attempt to sue him for damages resulting from injury sustained by them while riding in his car. In ninety-nine cases out of a hundred there is collusion between the assured and the person bringing suit and were it not for the fact that the insurance company is obligated to stand behind the assured and reimburse him for loss, the suit would never be brought.

Attention has lately been centered on the question of whether or not the instalment payment of premiums should be permitted on individual car risks. It is felt by some that it should be possible for the purchasers of insurance to pay their premiums in three or four instalments and that the practice of requiring the payment of premiums in advance should give way to the new economic order of things. It is urged that such a system would reduce the resistence which is now encountered in selling insurance, especially in some of the larger cities where premiums are high. The opponents of that program feel that the instalment payment basis could not be applied without an expenditure upon the part of the companies of a considerable sum to take care of a quadrupling of their statistical and accounting procedure. Furthermore, it is argued, the instalment plan is hardly a feasible proposition for the average insurance agent who is compelled to devote most of his time to the soliciting of business and has little time left for the quarterly collection of premiums.

Compulsory Automobile Insurance

By Harry J. Loman, Ph.D.

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THERE were 22,342,457 automobiles registered in the United States during the year 1926. This is an increase of 11.2 per cent over 1925 and about a 400 per cent increase for the past ten years. When marveling at the phenomenal growth of this now indispensable transportation convenience one is very apt to forget that each year it is exacting a human toll which in 1926 involved over 20,000 fatalities, upwards of 40,000 serious injuries and about 500,000 minor injuries. Moreover, these figures are increasing from year to year, although it is gratifying to know they have until the last two years showed a marked tendency to decrease on a per car basis.

Everyone agrees that from a purely humanitarian viewpoint every effort should be made to curb the losses and suffering occasioned by this juggernaut, but no adequate remedy has yet been found.

Economic Loss Caused by Automobiles

Aside from the humane aspect of the problem we must also consider the economic significance of this destruction of man power. It is frequently asserted that most of those injured and killed by automobiles are either children or aged persons. From the few figures which are available it would seem about twenty per cent of them are over fifty-five and about thirty per cent under fifteen years of age. Surely then it would be conservative to say that not more than twenty per cent have passed their period of economic usefulness, especially in this age of preventive medicine when most children who live to be old enough to walk in front of automobiles have excellent chances of reaching maturity, providing one of the said automobiles does not hit them. If we assume the remaining eighty per cent otherwise might have enjoyed, on the average, twenty additional years of productive life, the economic loss may be calculated as follows:

(1) Eighty per cent of the 20,000 killed or 16,000 x 20 years = a loss of 320,000 productive years.

(2) If each of these years is valued conservatively at $1000 the annual death losses amount to $320,000,000.

(3) If we add the other serious and minor accidents which cause an economic loss equivalent at least to the losses resulting from death, we have a total of $640,000,000.

To make matters worse, in most accidents the individuals and families who are least able to afford the loss of a productive member of a family are the hardest hit, especially since precious few of them find it possible to collect adequate damages.

We have before us then a twofold problem of reducing automobile accidents and indemnifying those who have suffered personal loss or injury. To attain these ends it has been suggested we have rigid enforcement of stringent traffic laws and more automobile insurance. In fact, the financial inabilty of many automobile owners to pay the consequences of ownership and operation of automobiles has given rise to a very insistent demand that the state shall bring compulsion to bear on those who have not seen fit to meet their obligations voluntarily. Specifically this takes the form of compulsory automobile insurance. Although practically every state with densely populated areas has had compulsory automobile insurance laws proposed, thus far Massachusetts is the only state which has passed a comprehensive law of this nature.

MASSACHUSETTS COMPULSORY AUTOMOBILE LIABILITY SECURITY ACT

It may be of interest to summarize at this point the provisions of the Massachusetts law. At the 1925 legislative session a law was enacted known as the Massachusetts Compulsory Automobile Liability Security Act, which provides that before an automobile owner can obtain a license for 1927 he must present a certificate showing that he has provided for the payment of legal and valid personal injury claims arising out of his negligence, the claimant being faultless

The form of the security may be:

(1) A Motor Vehicle Liability Policy with limits of $5000–$10,000 or
(2) A Motor Vehicle Liability Bond with the same limits or
(3) A deposit of $5000 in cash or acceptable securities.

In order to be certain that the evidence of financial responsibility is proper and adequate the insurance policies and rates must be approved by the State Insurance Department or if securities are used they must be acceptable to the Division of Highways.

The law does not apply to visiting non-residents who because of their short stay may not be required by law to register their automobile nor to the state or its political subdivisions, corporations subject to the supervision of the Department of Public Utilities, street railways under public control and registrants now required by previous laws to furnish security.

REASONS FOR SCARCITY OF SUCH LAWS

If the bulk of the economic loss as previously indicated falls upon the poorer classes and they go unindemnified, it may be asked why have so many states considered remedial legislation and failed to enact it? The answer is: because such proposals have received only passive support and very active resistance.

Since most citizens are exposed to the danger of the automobile and desire to collect damages if they are injured, it would seem that this kind of legislation would receive almost universal support. However, such is not the case and the organized efforts of automobile clubs, insurance companies and the farmers have successfully prevented the passage of these laws.

Many arguments against this legislation have been presented by the opposing groups and it is our intention to enumerate and examine the more important of them. Inasmuch as not all the proposed laws have been alike fundamentally, *i.e.* some provide compulsory insurance for the awards arising out of negligence while others contemplate an overthrow of the doctrine of personal fault and place a presumption of responsibility on the motorist, it is necessary to separate the two groups of arguments and we will treat them in the same order in which they have been mentioned.

Arguments Against Compulsory Automobile Liability Insurance.—(1) It is claimed that instead of decreasing the accidents there will be a tremendous increase. The theory of this is that the compulsory assumption of the financial responsibility of accidents certainly will not make drivers more careful, but quite to the contrary many of those who were formerly careful on account of the fear of individual financial responsibility will now become careless because they are insured.

Many persons have proceeded on the theory that since insurance companies usually select their risks they will eliminate the reckless and incompetent, but a law compelling the owner to be insured does not reach all of the operators of cars and hence the supervisory influence of the insurance companies over the persons whom they insure will not reach many of the reckless and incompetent drivers.

(2) Only forty per cent of those who sustain personal damage are legally entitled to collect. Of these only one-fourth fail to collect because of financial irresponsibility. This means that not more than ten per cent of the total cases are without the protection which compulsory liability insurance would give them.

(3) There will be a considerable increase in the cost of automobile liability insurance. The cost of this insurance already averages $30 per car and since compulsory insurance will not reduce accidents because of the reasons given in a preceding argument, the cost will move upwards. Besides, the knowledge that insurance is carried will bring in the claims of guests and members of the family of the insured who are injured while riding in his car, a large increase in dishonest claims aimed to defraud the insurance companies and many other suits which under the present circumstances would not be commenced. Then, too, juries are notoriously generous with the funds of large corporations and if every automobile is compulsorily insured they will know the eventual payment will not come out of the pocket of the defendant motorist and the consequence will be a tendency to increase the size of the award. All of these factors will be reflected in the rates which undoubtedly must be increased to cover the new hazards. Moreover the burden of additional litigation will further clog our already congested courts and increase the costs of the administration of justice.

(4) It is claimed that the heaviest burden of the increased cost will fall upon the eighty per cent of un-insured owners, who are for the most part careful and responsible drivers and for reasons best known to themselves have not seen fit to carry insurance. It is estimated about fifty per cent of the owners in city territory are already insured and most of the cars in rural districts are owned by farmers and business men who are responsible at least to the extent of the average judgment.

(5) A large number of cases cannot be reached because a state cannot impose insurance on a visiting car which is not required to obtain a license, nor does a state have extra-territorial jurisdiction over its own licensed cars when they travel out of the state. Injuries occurring on private property, or caused by criminals or those who escape from the scene without being identified will not be benefited by such a law.

(6) It would lead to the socialization of insurance and more government in business. If the state is going to compel its citizens to insure there will be constant agitation for the state to furnish the protection at cost. Then the state will have to compel the insurance companies to accept risks which their better underwriting judgment tells them to reject and at rates which are dictated by the state. Since this would cause the private companies to withdraw from the states which imposed such obligations, it involves a further extension of the doctrine of paternalism in the form of state in-

surance. Furthermore, if it is logical to compel motorists to insure their liability, all others against whom awards might be made should be compelled to do likewise.

(7) Legal compulsion has never been and never will be popular. Whenever a compulsory law is unpopular it breeds contempt and leads to evasion. Compulsory automobile liability insurance is unpopular with many persons and therefore the social consequences are likely to be highly undesirable. In addition there is some doubt as to the legality of such compulsion.

The foregoing is merely a presentation of the principal arguments against compulsory automobile insurance, but there is a lack of agreement concerning their validity and hence in all fairness we should consider the other side. Let us turn then to an analysis of these arguments following the same order in which they have been stated.

An Analysis of the Arguments Against Compulsory Automobile Liability Insurance.—(1) It is generally conceded that the transfer of individual responsibility is not likely to make automobile drivers more careful. It is expected that most laws requiring automobile liability insurance will be similar to the Massachusetts law in compelling the automobile owner to obtain insurance as a prerequisite to the granting of a license. Naturally the insurance companies will refuse to provide coverage to those persons whose records show them to be notoriously reckless drivers. At least this will have the effect of preventing a number of undesirable persons from securing licenses.

(2) The statement that not more than ten per cent of such losses go unsatisfied because of financial responsibility is based on a series of estimates and may be disputed. In any event this fact seems certain, namely, that the number of accidents which go without indemnification does not necessarily bear any relation to the amount of the economic loss which has been sustained. This is due to the willingness to settle minor claims rather than dispute them, although a serious claim would be vigorously fought. And furthermore, this applies not only to the uninsured risks but also to the insurance companies who have placed what is commonly known as a nuisance value on small claims. They say it costs less to pay these claims without dispute than to allow them to be argued before a jury.

(3) If the accidents are not reduced the cost to certain groups of policyholders will no doubt be increased, not only because of the greater possibilities of fraudulent claims but also because juries will be more liberal. However, it does not follow that the average cost per car will rise; in fact it will no doubt go lower. It is estimated that about twenty per cent of all the automobile owners in the United States are insured. In cities of 150,000 to 500,000 population from thirty-three per cent to forty-seven and one half per cent are insured, and in cities over 500,000 it is estimated forty-seven and one half per cent and upwards are insured. Therefore the majority of the uninsured are located in the less hazardous districts and their rates should be much lower.

The statement that accidents will not be reduced is also debatable. Perhaps some persons will become more reckless if they are no longer financially responsible, but the fear of not being able to get a license unless insurance has been obtained and the desire to reduce the cost of insurance will have some effect. It is a well known fact that organized efforts toward the reduction of insurable losses follows the issuance of insurance and does not precede. Consider for a moment the efforts and success of the fire insurance companies toward the reduction of fire waste in recent years, conservation of life by the life insurance companies and the reduction of industrial accidents by the casualty companies. Prevention and conservation are among the greatest services which insurance companies are rendering society today, but it should be remembered that they did not begin these conservation campaigns before they had assumed risks. Therefore it is quite reasonable to expect the insurance companies to live up to their reputation in dealing with automobile accidents. Moreover, at the present time nearly one half of an automobile liability insurance premium is used for expenses other than the amounts paid to claimants. If everyone must have the insurance the increased volume of business should enable some savings in expenses, especially those having to do with acquisition.

(4) Very few of the eighty per cent of uninsured owners are both innocent and responsible. In the first place the "innocence" of a motorist has usually been considered synonymous with a spotless accident record. Merely because ninety-five per cent of the motorists have no accidents in a given year is no reason for concluding they will not have any in the years to come, any more than it is logical to say a given industrial risk does not need compensation insurance because it has only one serious accident in twenty years, or that fire insurance is unnecessary because less than one per cent of the insured risks will have a fire during the next year.

The conclusions as to carefulness and innocence are no doubt based on lack of sufficient exposure. To say that a small percentage of habitually reckless drivers cause most of the accidents is unwarranted in the absence of statistics showing the mileage driven by those persons who have had more than one accident. Even the most cautious and clever drivers have serious accidents and any motorist who covers any considerable mileage knows perfectly well that he does not have his car under complete control at all times. It is at just such a time when accidents happen.

Although nearly one half of the city-owned cars are insured, the other half presumably belong very largely to persons without financial responsibility. It is said that most of those in rural districts can meet the average judgment. That is very likely true because the average judgment is about $300. However the average is misleading as may be shown from the claims settled by a number of insurance companies in 1923–24. The total payments of 142,841 claims amounted to $42,039,011. Of these 124,606 were settled for $500 or less or a total of $14,227,678. The balance of 18,235 claims were settled for over $500 each or a total of $27,811,333.

(5) The argument that a state lacks extra-territorial jurisdiction is really begging the question, because it is a well known fact that ordinarily cars cover most of their mileage in the state where they are licensed. However, the real answer to this argument is for all states to have compulsory insurance and then the question of extra-territorial jurisdiction will not arise.

(6) Undoubtedly a law compelling insurance is meaningless unless the state assures the citizens of its availability. However, it does not follow that the institution of insurance will be taken over by the state nor compulsory insurance extended to other forms of liability.

Experiments in state insurance other than where insurance has been made compulsory have not been very successful in the United States and few persons desire an extension of the paternalistic principle. Also, we are not justified in concluding that liability of every description should be compulsorily insured. Such compulsion is necessary only when the failure to insure creates a problem of national public interest and consequence. Inasmuch as the automobile is killing at least sixty per cent more persons each year than die of industrial accidents, it already has reached that stage. Nor does it follow that the insurance will be written exclusively by the state and in all probability best results would be obtained by competitive state insurance. If the insurance men, who are at present opposing compulsory automobile insurance because of the fear of state insurance, would promote legislation which provides for competitive state insurance, they would be really promoting the cause of insurance.

(7) Of course none of us relish legal compulsion but it must be remembered the purpose of compulsory insurance is twofold: to furnish protection to the injured members of society and to place the financial burden where it belongs. Unless we are anarchists and do not believe in government we must admit that one of the functions of government is to protect its citizens. The performance of this duty has always brought objections from the groups who are most affected by regulation and yet it seems impossible to maintain law and order in any other way.

Keeping in mind the purpose of compulsory automobile liability insurance, a review of the foregoing arguments pro and con leads one to the conclusion that the case in its favor is not very convincing. There is indeed a serious doubt whether it anywhere nearly approaches a solution of our problems of accident reduction and indemnification, especially since sixty per cent of the injury cases will not be benefited by compulsory liability insurance.

AN ALTERNATE PLAN

On account of the disadvantages of compulsory automobile liability insurance and the inadequacy of the system of personal injury suits, it has been suggested that the whole matter be placed on the same basis as workmen's compensation, *i.e.* consider these accidents as a natural and inevitable consequence of the operation of automobiles, make the motorist responsible to all parties to whom he causes personal damage regardless of the doctrine of personal fault, pay them according to a schedule of benefits adjusted to their wages, and consider the cost of the insurance for such payments the same as any other operating expense. This would protect the great number who are now unable to collect damages and remove the burden of proof from the injured party, who is now at a great disadvantage because there are frequently no witnesses except the occupants of the automobile.

Objections to this Plan.—It is claimed this remedy has all the shortcomings of compulsory liability insurance except that the number of eligible beneficiaries will be increased, and in addition has some objections of its own which are even more important. The latter are as follows:

(1) Such legislation would involve the abolition of the common law of negligence and the doctrine of personal fault. This will mean that responsible and innocent drivers will be forced to pay damages whether they are to blame or not. According to many lawyers this is unconstitutional because it involves a taking of property without due process of law.

(2) It will lead to an unwarranted extension of the doctrine of paternalism such as compulsory accident and

health insurance, old age pensions, unemployment insurance and the like.

(3) It is impossible to establish an equitable scale of benefits for the public, especially for women and children who are not receiving wages. At the same time it will prevent persons who would otherwise be entitled to large damages from obtaining more than a limited amount.

(4) The flood gates will be opened for fraudulent claims and malingering on a scale greatly in excess of those which might be anticipated even under compulsory liability insurance.

(5) It will be difficult if not impossible to apply the system to other than pedestrians.

Analysis of the Objections to this Plan.—Insofar as the arguments against this plan are similar to those for compulsory liability insurance, we do not need to duplicate our analysis. However, the answers to the additional objections deserve consideration.

(1) With respect to the waiving of the legal principle of negligence we already have our precedent in Workmen's Compensation Insurance. It is claimed by the opponents of this type of law that the latter rests on an entirely different basis, namely, the contractual relation between master and servant and therefore is not comparable to the liability of a motorist to the public. Apparently it has been forgotten that less than a hundred years ago the liability of a master to his servant was the same as to strangers. It was only over a long and tedious period that the common law was gradually changed in this respect. It is scarcely believable that anyone would wish to follow the same painful and tortuous route with automobile liability, slowly modifying the negligence defenses until we eventually are forced to adopt the compensation principle.

In many respects the damage done by the automobile is comparable to that of industry. If we accept the figures which tend to show that not more than forty per cent of those who are killed and injured are legally entitled to damages, we do not have to conclude that the remaining sixty per cent are entirely to blame. Instead they are usually victims of a combination of circumstances frequently impersonal in character and since the burden of proof is on them to show they are without fault and the motorist was entirely to blame, they are unable to collect. This is especially difficult in the case of pedestrians struck by automobiles and constituting more than one half of those involved in personal injury accidents. The injured person seldom knows what hit him, let alone the attendant circumstances. As if this were not sufficient handicap it frequently happens that the only witnesses were occupants of the motorist's car.

Even when the injured party has been guilty of contributory negligence we must remember that present traffic conditions have been caused by the automobile. The automobile has been developed at a remarkable rate within a very few years and has had to use the facilities it found available. No one is to blame for a lack of ability to wholly adapt himself to these changed circumstances. Habit and custom can only be changed over a long period of years and we undoubtedly are becoming more used to the vagaries of automobiles because the number of fatalities per registered car is now only forty per cent of what it was ten years ago. In the meantime it seems no more than fair and just to compel the automobile to bear the financial consequences incidental to its ownership and operation. It is claimed that the additional burden would be equivalent to the present taxes borne by the automobile and amounting to about $667,-

000,000 in 1925. At the present time the death and injury losses of the family breadwinners are borne by the suffering families or by general taxation to support our public institutions or by private contributions to charity. Although the nation's automobile bill is now over eleven billions annually, it should not be impossible for the business to absorb an additional three quarters of a billion.

The time-honored legal objection to every new law—it is unconstitutional—can be surmounted. If laws aimed to protect the majority of the citizens of a nation are unconstitutional, then the Constitution needs changing. The use of the word "majority" is used advisedly because it is literally true that practically all citizens are exposed to the dangers of automobiles.

(2) In the absence of any great need there will be very little agitation for the compulsory adoption of these other forms of insurance. It is the inability of certain social groups to take care of themselves which forces the government to provide for them; a policy sometimes called paternalism.

(3) No set scale of benefits need be prescribed for those who are income producers. The law can provide for a fixed percentage of wages to be determined in some prescribed manner such as sixty per cent of the average weekly wage for the year preceding the accident. In the case of persons who are not deprived of any income an arbitrary scale would have to be used.

Most persons are willing to accept the assurance of the replacement of lost earnings in lieu of the possibility of a large award at common law. In fact the possibility of collecting more than is deserved is one of the defects of the personal fault system.

(4) No doubt a great many fraudulent claims will be presented just as in many other kinds of insurance. However, we can trust the insurance companies to reduce this to a minimum.

(5) Whenever more than one vehicle is involved in a personal injury accident the loss could be adjusted according to the principle of cross-liabilities, *i.e.* the proportion of fault should be determined with respect to each vehicle and the damage assessed accordingly.

CONCLUSION

The only arguments presented in this article are those which the interested parties have stressed the most. However, they should be sufficient to show that compulsory automobile insurance is a moot question even though much of the discussion is based on deductive reasoning. If simple inductive methods were available in the solution of socio-economic problems, as they are in those of chemistry and physics, we could soon say decisively what should be done. As it is, a positive answer one way or the other is nothing more than the judgment of individuals as to the importance or unimportance of the several arguments.

Current Rate-Making Procedure in Workmen's Compensation Insurance

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THE principle of workmen's compensation is based on the philosophy that industrial injuries are primarily social, not individual, in origin and that therefore losses resulting therefrom should be shouldered by society and not by the injured worker. For the sake of administrative simplicity, workmen's compensation statutes charge the employer directly with the responsibility of indemnity; the employer in turn is presumed to assess the consumers of his product for this cost in order to reimburse himself.[1] But a law which merely *charges* the employer with responsibility is only half a compensation law; it is perhaps even more important to see that he *discharges* it! Various methods are in use in the different states to guarantee the payment of compensation awards, but by far the best and most usual is the requirement that employers carry compensation insurance.

The crux of workmen's compensation is thus compulsory insurance. So the crux of insurance is the insurance premium or rate. There are at least two considerations which cause the making of compensation insurance manual[2] rates to be of interest not only to actuary and technician, but to socially well-informed people generally. They are briefly: (1) the social nature of compensation insurance, its origin resting on the fiat of a state legislature, its scope embracing social groups characterized by low incomes; (2) the importance of maintaining compensation insurance rates which are neither redundant, that is, unfair to the consuming public which supports the system, nor inadequate, that is, unfair to the companies, who in this field are classified practically as public utilities.

The matter of maintaining compensation rate levels fair to both parties at interest is by no means a simple one. At times within the last ten years the companies have received rates more than sufficient to pay losses and other costs. In more recent years, the business has on the whole not been profitable for the companies. In 1924 the stock and mutual companies of the United States reported an underwriting loss of 8.1 per cent; in 1925, an underwriting loss of 6.5 per cent.[3] The ten-year average of the stock companies, 1916–25, shows an underwriting loss of 1.2 per cent, not large, but hardly to be viewed with equanimity; the mutual companies make a better showing for the same period, 18.5 per cent underwriting gain, but the mutuals wrote only about one-fifth of the business.[4] Certainly if the casualty companies relied wholly on their compensation business they would be in sorry plight.

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[1] Compensation costs are in the nature of a tax and for this reason in particular cases the process of shifting the incidence of the cost may be partially or even entirely blocked.

[2] Because of limitations of space, "merit" rating cannot be discussed in this article.

[3] *Casualty Insurance Report,* 1926, A. M. Best, Inc.

[4] *Ibid.*

Why should the companies lose on their compensation insurance business? The answer lies in a statement of the fundamental difficulties encountered in compensation insurance rate-making. They are of two classes: (1) those which are *socio-economic*, that is, created by social and business causes; (2) those which are *actuarial*, created by the nature of the rate-making data themselves.

DIFFICULTIES ENCOUNTERED

1. **Socio-economic Difficulties.**—Although the ideal of the rate-maker is adequate without redundancy, two important influences operate to make rates too low rather than too high. The more important of the two is the control exercised by the insurance commissioners of the various states, which extends in some cases as far as the actual calculation of the rate to be charged, as in Texas. Usually the commissioner's authority is confined to the power of giving or withholding his approval of rates, but this gives him for practical purposes almost as much power as if he were permitted to make the rate, and, even assuming the best intentions on the part of the commissioner, the system in the long run works toward inadequacy rather than in the opposite direction. Also the large insurance companies have in the past few years apparently been glad to write the "line" at little or no profit, recognizing in it an excellent "business getter" or "opening wedge" into the general insurance accounts of prospective clients. Rate-making difficulties which arise from social and business influences are likely to continue for some time.

2. **Actuarial Difficulties.**—Up to this time we have assumed it a simple matter to calculate the correct premium, and that premiums which would otherwise be correct are lowered because of socio-economic influences. Nothing is farther from the truth. Basically the rate calculation is an easy one, as compensation rates are expressed as so many cents per $100 of payroll. For example, Classification 6280 (Blasting)[5] reports losses of $5000 and payroll of $1,000,000; the first amount divided by the second results in a pure premium, or loss rate, of $.50.

But some very real actuarial difficulties have to be surmounted by the rate-maker before he arrives at this simple index of loss cost! They are of two kinds: (a) *those due to the necessity of using loss and payroll data defective in accuracy because of the passing of time;* (b) *those due to the necessity of using loss and payroll data defective in accuracy because insufficient in number.*

(a) **Rate-Making Difficulties Due to Use of Old Data.**—Every rate-maker is faced with this first difficulty. It is inherent in the rate-making process. He must go back in point of time in order to secure data sufficiently ample so that he may achieve the benefit of the law of average, thus avoiding the second type of actuarial difficulty referred to above. But having decided to use old data, he must make a number of important corrections in the experience as reported if it is to be used for making rates to be applied under current cost conditions. Between the first years represented by his oldest data and today, accident frequency and severity rates may have changed, wage levels may have gone up or down, the legislature may have met and liberalized the provisions of the law, even an unrevised compensation law may be interpreted more and more liberally, that is, in favor of the injured. But data even thus corrected are not strictly up-to-date: and a rate based on such data might very easily be out-of-date before it is printed in the manual. This is because insurance rates are applied and charged at the beginning of the policy period, in compensation insurance one year, and a rate based on data corrected only to the date of the rate calculation does not take into account the changes affecting cost which may operate during the period of the policy.

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[5] The classification, is the compensation insurance risk-unit; data are collected and rates made by classifications. The classification may represent an entire industry, as *cast iron pipe manufacturing;* a trade or occupation, as *carpentry;* or a process, as *blast furnace operation.*

In the developmental stages of rate-making, the actuary naturally considered it essential that he devise a correction factor for every influence affecting the usability of loss and payroll data. Not only did he introduce factors calculated to bring the experience up to the level of the time of making the rate; he even tried to project into the unknown future his concept as to what the rate should be for the coming year. Although his motives were praiseworthy, the result was a rate-making machine highly complicated, cumbersome, and in spite of his best efforts, behind the times. No one today realizes better than the rate-maker himself the futility of this perpetual clutching at a rainbow. As a result correction factors today (1) are extremely simple in plan, and (2) are confined exclusively to bring data approximately up to the date of the rate calculation and do not attempt to search out the future.

(b) **Rate-Making Difficulties Due to Use of Insufficient Data.**—But the end of the rate-maker's trials is not yet! He is required to quote in his manual of rates a rate for every single industry, trade and process in the state. There may be only one leather tannery in the state; he must have a rate for it nevertheless. To make a rate on the basis of the experience of a single risk is unthinkable, so the rate-maker combines his tannery data with those of tanneries of other states. This process of combination brings with it new difficulties: Losses cannot be added without correction because they are paid on the basis of individual state laws; even assuming exactly duplicate laws in two states (which is contrary to fact), loss data are not comparable because of very real differences between states in the attitude of boards and courts. Payrolls also should not be added without modification (although for the sake of expediency they may be) because wage levels are not the same in different states.

Rate-Making Under Ideal Conditions.—In the strict sense there are no ideal rate-making conditions; the rate-maker always is forced to use old data. But he approaches *practically ideal* conditions when he is able to make his rate on his own state experience. At one swoop he eliminates the second of the two actuarial difficulties, that of combining dissimilar data. This is an advantage, for no matter how skilfully he combines dissimilar data, the process of combination involves assumptions, and assumptions (which are based on putative relationships) are never as satisfactory as relationships which are proven. Of course, except in the largest industrial states, even a practically ideal system is not possible; of the forty-three states only nine make no use whatever of interstate experience. The remaining states use interstate rates either wholly or in part.

Rate-Making on Interstate Experience.—The National Council on Compensation Insurance, with headquarters in New York City, is by far the most important rate-making agency in its field in the United States. Although there are a number of independent bureaus engaged in the calculation of compensation insurance rates, the National Council makes rates in thirty-four states (every one of the states using interstate experience for rate-making), and numbers among its members most of the leading casualty companies. Close liaison is maintained with the National Convention of Insurance Commissioners, which has a permanent representative at the main office of the Council. Membership is non-partisan.

In preparing for rate-making purposes loss and payroll data reported from the various states, a number of important variables have to be considered and measured. The variables whose influence it is desirable to exclude are those which have an arbitrary influence on the statistics representing the number and severity of accidents as embodied in loss experience, such as the number of dollars per week indemnity promised for a death or a total disability in the compensation law, the number of weeks for which this indemnity will be paid, the duration of the waiting period, if any, etc. For example, it is not permissible to add the death losses of New York for a given classification with those of Virginia without correction because in New York $5000 may represent the indemnity *of one death,* and in Virginia, *of two deaths,* a difference which may be due primarily to the less liberal provisions of the Virginia law. The purpose of combining the experience of different states is to secure a wider volume of experience, but insofar as possible the combination should represent the addition of data reduced to terms of a common denominator: comparable industrial accident frequency and severity rates.[6]

Suppose the rate-maker is engaged in ascertaining the compensation rate for *Classification 5204: Concrete work, buildings,* etc., to be applied in Virginia in 1927. He realizes that the experience of Virginia alone is probably not great enough in volume to justify the making of a rate on the basis of its own experience. When a volume of experience is small, it is untrustworthy. A low *indicated* cost (basis of Virginia experience), even for a period of several years, probably is not due to the fact that the industry in Virginia is inherently less hazardous than elsewhere, but happens because there are only a few operations of this type in Virginia, and these few operations chanced to have a good year or series of years. The same doubt is likewise raised when a state *indicated* cost is higher than is the general level of the rest of the country. The rate-maker therefore decides to combine Virginia's experience for this classification with the experience of thirty other states.

What the rate-maker wants is a picture of the Virginia loss cost in this particular classification, but modified by the experience of the remainder of the country. If Virginia indicated cost is high, the effect of mixing Virginia's high cost experience with the lower cost experience of other states will be to modify both, raising the cost of the other states and lowering that for Virginia, but the greater influence will be exerted on that of Virginia, since it is only one of many states.

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[6] Wage levels also vary between states and the combination of uncorrected payroll data ignores this disparity. In the present revision payrolls have not been corrected either for these differences or for changes in wage-levels over a period of time. Probably interstate differences are so tenuous as to be practically non-measurable. Differences over a period of time have not been corrected because in the early part of the experience period wages fell, in the latter, they rose. There is consequently no point in revising payrolls, as the aggregate payroll would remain practically as now.

If the Virginia indicated loss cost is comparatively low, the effect of the same operation will be to raise it somewhat. In short, since Virginia experience cannot be relied upon to produce its own rates, the rate-maker does the next best thing under the circumstances; he calculates an *average* or national pure premium rate. Like other averages, this rate is fictitious in that it is not precisely correct for any particular state, in this case Virginia, but in the long run the average rate will be more stable and thus more satisfactory than the Virginia indicated rate. An *average* rate is naturally not as accurate an index of hazard in a given classification as a rate made from the state's own experience where the state experience is sufficient, but if this experience is deficient, the average rate offers the only feasible way of rate-making.

Reduced to fundamentals, the operation of combining the experience of various states is twofold: (1) The process of combination itself, that is, adding loss and payroll data for thirty or more states; (2) the process of reverting the results produced by (1) in order to make these results applicable to a given state, as Virginia.

Combining Loss and Payroll Data for Classification 5204.—As dollars of losses are non-comparable as reported by the individual states, some common denominator must be used to make them comparable. In the 1927 Revision by the National Council on Compensation Insurance, as has been the practice since the 1920 revision, the cost of workmen's compensation under the New York law has been used for this purpose. New York is the largest industrial state in the country. It presents a great variety of industrial classifications, and for this reason costs under the New York law have been taken as the standard. In various rate revisions during the past ten years, various methods have been used to "convert," that is, to "step up" or "step down" the actual loss experience of individual states to the New York basis. At one time, for example, the rather simple device was used of comparing the average cost of a death for all classifications in an individual state, as Virginia, with the average cost in New York; if the average cost in New York has been twenty-five per cent higher than in Virginia, obviously, in order to put Virginia actual or reported death losses on the New York basis, it is only necessary to multiply the actual Virginia death losses, $100,000 for example, by 125 per cent or $125,000. The conversion of the reported losses of all the states to the same basis and their addition results in a national loss figure for the classification; and the comparison of these national losses with combined state payrolls for the same classification produces the national pure premium. It will be noted that this national pure premium, however, is still in terms of the New York law.

The method of converting to the New York basis used in the current rate revision is known as that of "experience differentials," to indicate the fact that the present conversion factors are made up from actual loss and payroll experience in the various states as contrasted with the so-called "law differentials" of the early days, which were based primarily on a standard distribution of accidents, that is, on a *typical*, not an *actual* array of accidents. Experience is reported and premiums are calculated for three groups of losses: serious, non-serious, and medical. There are therefore three, not one, conversion factors, corresponding to the three loss groups. The formula for ascertaining the conversion factor for serious losses in the 1927 revision follows:

$$\frac{\dfrac{\text{New York, 1918–22, serious actual losses (present law level)}}{\text{New York, 1918–22, serious expected losses (1918–22 payroll x 1923 Nat. Pure Prem.)}}}{\dfrac{\text{Virginia, 1918–22, serious actual losses (present law level)}}{\text{Virginia, 1918–22, serious expected losses (1918–22 payroll x 1923 Nat. Pure Prem.)}}}$$

Similar differentials are calculated for non-serious and medical losses. The loss figures used in calculating these differentials are of course those for all classifications within the respective states, since the purpose of the experience differential is to measure the differences between the state-wide serious loss costs of specified states whose data are being converted and the state-wide serious loss costs of the standard state, New York. A comparison of the *actual* New York serious losses (brought up-to-date by appropriate modifiers to bring the dollars of losses to terms of the present compensation law) with the *expected* New York serious losses for the same period, indicates the extent to which the New York law produces serious losses greater or less than the national average. Let us assume that New York actual serious losses were twenty per cent higher than New York expected; therefore, New York experience for all classifications showed a serious loss cost one-fifth higher than that for the country as a whole. If a similar operation is followed using the experience of Virginia (and for every other state), a similar measurement of Virginia serious cost compared to the entire country is produced. If this ratio of actual to expected losses is eighty per cent, it is apparent that for the five years 1918–22 (the latest available for *all* the states in the fall of 1926), Virginia serious losses are twenty per cent less than the national average. The experience differential or multiplier applicable to Virginia serious losses in order to bring them to the New York present law level is: 120 per cent divided by eighty per cent, or a factor of 150 (per cent). One hundred and fifty per cent times the actual losses (brought up to present law level) of Virginia in Classification 5204, will produce Virginia losses on the New York present law basis. If the same process is followed for the remaining states whose experience is to be used in the combining operation, the final result will represent total United States serious losses for Classification 5204. The addition of payrolls for the same states for the same classification will produce the total United States payroll. A comparison of the two will produce the United States pure premium for Classification 5204, still, however, on the basis of the New York present law level. In the current revision, the national pure premiums on the New York present law basis for Classification 5204 are: serious, $1.67; non-serious, $1.31; medical, $.77.

Reverting National Pure Premiums to Individual State Basis.—The rate-maker now has an average loss rate or national pure premium, but it cannot be used in its present form, since it is still on the basis of the present New York law, incidentally a higher cost basis than that of almost every other state. The simplest method yet used in compensation rate-making for reverting or "stepping back" national pure premiums on the New York basis to national pure premiums on an individual state basis (Virginia) was to apply to the national pure premiums on the New York basis the reciprocal of the factor used for conversion. For example, in our illustration the conversion factor is 150 per cent; to revert to the national pure premium on the Virginia present law basis, the serious pure premium of $1.67 would be multiplied by 66.66 per cent (the reciprocal of 150 per cent) or about $1.11. Substantially the same method is used in the present revision, with two modifications.[7] The national pure premiums based on the years 1918–22, as derived above, are multiplied by total payrolls for all classes, the result being *expected* losses for the entire state of Virginia for all compensation risks written (on the New York present law basis). The sum of all Virginia *actual* losses (present low basis) for the same classifications for the same period, when compared with the sum of expected losses, gives a percentage factor which measures directly the extent to which *any* national pure premium on the New York present law basis including the one we have secured for No. 5204, must be modified to make it a *national pure premium, Virginia present law basis.* The reversion factors in the 1927 Revision are: serious, .357; non-serious, .338; medical, .795. Reverted national pure premiums on the Virginia present law basis become: serious, .60; non-serious, .44; medical, .61.

Giving a State the Benefit of its Own Experience.—Up to the present point we have assumed that the experience gathered in Virginia for Classification 5204 is so scanty as to be undependable for autonomous rate-making. This is not necessarily so and certainly if the quantity of classification experience, as judged by some standard, warrants, state experience should play an important part in determining the rate. The setting up of such a standard or so-called state credibility criterion is a recent departure in the National Council rate structure. Suppose the rate-maker wishes to test the credibility of his serious loss experience from Virginia. The average cost of a serious loss in Virginia for all classifications is, let us say, $5000 (basis of New York present law). He assumes that if any classification develops twenty-five serious losses, a total serious loss cost of $125,000, the classification is entitled to 100 per cent local credibility and the national pure premium is not used at all in making the rate; if it develops a smaller cost, the percentage of local credibility will be decreased proportionately. The present criteria are arranged in five groups, ranging from zero to 100 per cent local credibility, at intervals of twenty-five per cent.[8]

Against its criterion are checked Virginia *expected* losses for Classification 5204 for the period, 1920–24, derived by multiplying Virginia payrolls by the national pure premium, 1918–22. *Actual* Virginia losses are not taken, because they are bound to vary considerably from time to time. In the present revision serious losses for Classification 5204 fall within the third credibility class: fifty per cent local credibility; non-serious within the second: seventy-five per cent; medical within the first: 100 per cent.

For Classification 5204 the indicated pure premium on Virginia experience alone for the period 1920–24[9] (losses amended to present Virginia law level) for serious losses is $1.09; the national pure premium, Virginia present law basis, is as we have seen only $.60. Which rate should be taken—the state's own rate or the national average? If the indicated pure premium is based on ample data, measured by the credibility criterion, the national pure premium ought to be largely or entirely disregarded. Thus in the present revision the state indicated serious pure premium receives a weight of fifty per cent, making the combined or so-called *formula* pure premium $.85. A similar process is followed with non-serious and medical pure premiums, using the appropriate weights.

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[7] For example, the reversion factor includes also a sub-factor introduced to convert the national pure premium on the *Virginia present law basis* (1918–22 experience) to the same basis (1920–24 experience). The necessity for this will be made apparent in the following section dealing with state credibility.

[8] There is a separate criterion for each loss group.

[9] Experience for this classification from *all* states is available only to 1922; from Virginia, to 1924.

"Pitching" Rate Levels.—One matter of importance demands consideration at this point. The calculation of national pure premiums at the Virginia present law level as the term implies, has nothing to do with determining absolute premium amounts. The purpose of combining experience from different states is not to ascertain the exact cost level to be charged for each classification, but to secure a truer index of relativity *between classifications*. The effect of combination is to change the *relative* costs of classifications within the state; but the necessity of ascertaining *rate levels* still remains. Many factors (in fact, all other than legal, which have been measured), such as changes in accident rates, wage levels, etc., may have caused changes in cost since the time of our experience period. In order to bring the national pure premiums which are on the *Virginia present law level* to the *Virginia present cost level* a final correction factor is applied: National pure premiums, Virginia present law level, are multiplied by Virginia payrolls for the years 1922–3–4 in every classification, these years being the latest for which there is Virginia experience, and assumed to be typical of the rate level obtaining in 1927. Perhaps this assumption is not precisely correct, but it is practically so. The sum total of classification *expected* losses represents total pure premium income which will be received by all the companies, if they charged national pure premiums. A comparison of this total with the Virginia *actual* losses (present Virginia law level) for the same three years, shows the rate-maker whether the rate level, which would be established by national pure premiums, is too low or too high. If the *actual* losses have been higher than *expected*, this entire rate level has to be increased by a percentage expressing the amount of the discrepancy. The final correction factor will of course be the same for all classifications within Virginia and is applied impartially to the national pure premium of each. In the current revision this factor for Virginia serious pure premiums is 1.028, indicating that expected losses were approximately three per cent less than actual. When formula pure premiums rather than national pure premiums are used, the factor is of course applied to them instead. Thus the *serious* formula pure premium of .85 times 1.028 becomes .87; the non-serious, .38 becomes .39; the medical, .81 is unchanged. There is a separate final correction factor for each loss group.

Loading.—The tale of rate-making is nearly done. The formula (or national) pure premium *on the present Virginia rate level* is usually accepted by the actuarial committee of the Council, but not necessarily so if the pure premium varies a great deal from that underlying the present manual rate. Having decided upon a total pure premium of $2.07, the expense loading factor, and a special factor to cover catastrophe losses are added, making the manual rate \$3.55, which appears in the 1927 Manual for Virginia for Classification 5204.[10]

CONCLUSION

Two outstanding tendencies are apparent in this rapid summary of current rate-making procedure which should not be obscured by descriptive detail. *First:* there has been a most noticeable swing *away* from the extreme refinements of even three and four years ago, following a general realization that such refinements often defeat their own ends. There is in use today no factor to correct payroll figures, either between states or over a period of time in the same state. This omission is due, not because there are no differences, but because in the case of the first the differences are difficult to measure satisfactorily; in the second, the differences tend to cancel each other. Whatever factors are used to bring experience up to the present rate level are simple; nor is there any attempt to achieve absolute precision in this process. For example, in the present revision, it is assumed that the rate level established by the years 1922–24 (the latest for which there are data) is the same as that for 1927, the year in which the rates will be applied. No attempt of any kind is made to peer into the future, a function once attempted by the "projection factors" of past revisions. The following, by Mr. William Leslie, Manager of the National Council, is an excellent statement of the current policy of the Council:[11]

> We have come to believe that the most satisfactory method of rate-making is one which utilizes the experience of the past without introducing conjectural factors based upon predictions as to the future. In taking this course we tacitly assume that there is no substantial permanent trend in cost upward or downward and that if we adjust compensation rates annually upon the basis of a fixed number of years of past experience, these rates will on the average over a considerable period of years be neither excessive nor inadequate. Admittedly they will not fit the particular years in which they are applied. It is expected that there will be lean years and fat years, but that by husbanding the excesses of the fat years to meet the deficiencies of the lean years, the average will be generally satisfactory.

Second: there has been a noticeable swing *toward* giving the experience of the individual state more weight in ascertaining rates for that state. In the 1927 revision of the National Council, literally hundreds of manual rates have been made on purely single state experience. The rate-maker has always had to keep one eye on the indicated cost of the individual state, so as not to show too marked a discrepancy between the indicated and the national pure premium; now for the first time state credibility is an integral part of the rate structure.

Workmen's compensation insurance is still very young, measured by its fellows, but the trials of the pioneering days, characterized by the inevitable use of the method of trial and error, are past. It is not a criticism of any rate-maker or of any rate-making organization to say that out of the complexities of the past derive the simplicities of the present structure. Whatever the influence of social and business factors in the future, the major actuarial difficulties have been solved. It is significant that, for the

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[10] The formula for adding expense loading (which in Virginia is 41.5 per cent of gross premium) and the catastrophe loading (which is a constant of one cent) is:

$$\text{Gross Rate} = \frac{\text{Pure Prem.}}{1 - .415} + .01$$

[11] From a copy of an unpublished address delivered in 1925.

first time since the beginnings of compensation rate-making, the national rate-making body has selected the following as the official title of its rate-making plan: "The Permanent Rate-Making Method Adopted by the National Council on Compensation Insurance."

Multiple Line Coverage

By Benjamin Rush

President, Insurance Company of North America

ON March 4, 1922, the Congress of the United States approved an Act to Regulate Marine Insurance in the District of Columbia, which Act has since come to be designated by the title of the Model Marine Insurance Bill.

Congress, of course, has no power to legislate regarding insurance in the various states of the Union—it can only legislate for the District of Columbia. The above Act, therefore, was intended for a model for the various state legislatures to follow. The Bill was passed by Congress, after a very exhaustive series of hearings at which insurance men, merchants, shipowners, and others, were given every opportunity to state their views. It was passed on the initiative of the House Committee on Merchant Marine and Fisheries as being one of a series of steps necessary to improve the shipping trade and the commerce of the United States by putting them more on a parity with other competing commercial nations.

The first section of the Act is concerned with definitions; the second section of the Act provides as follows:

> Section 3. That a marine, fire-marine, or fire insurance company may be formed, admitted or licensed to write any or all insurance and reinsurance comprised in any one or more of the following numbered subdivisions:
>
> *First.* On marine risks as described in Section 1 of this Act under the definition of "marine insurance."
>
> *Second.* On property and rents and use and occupancy, against loss or damage by fire, lightning, tempest, earthquake, hail, frost, snow, explosion (other than explosion of steam boilers or flywheels), breakage or leakage of sprinklers or other apparatus erected for extinguishing fires, and on such apparatus against accidental injury; and against liability of the insured for such loss or damage; and on automobiles against loss or damage from collision or theft, and against liability of the owner or user for injury to person or property caused by his vehicle.
>
> *Third.* Against bodily injury or death by accident, and against disablement resulting from sickness, and every insurance appertaining thereto, including quarantine and identification.
>
> *Fourth.* Against liability of the insured for the death or disability of another.
>
> *Fifth.* Against loss of or damage to property resulting from causes other than fire, marine and inland navigation hazards, and against liability of the insured for such loss or damage, and on motor vehicles against fire, marine and inland navigation hazards, and against personal injury and death, and liability of the assured therefor, from explosions of steam boilers and engines, pipes and machinery connected therewith, and breakage of flywheels or machinery, and to make and certify inspections thereof, and against loss of use and occupancy from any cause; against loss by burglary, theft and forgery.
>
> *Sixth.* Against loss or damage from failure of debtors to pay their obligations to the insured.
>
> *Seventh.* Against loss from encumbrances on or defects in titles.
>
> *Eighth.* Against loss or damage by theft, injury, sickness or death of animals, and to furnish veterinary services.
>
> *Ninth.* Against any loss or liability arising from any other casualty or hazard not contrary to public policy, other than that appertaining to or connected with (1) life insurance (including the granting of endowments and annuities) and (2) fidelity and surety bonding.

In other words, the Congress of the United States after due deliberation, and the taking of exhaustive evidence, decided that it was to the advantage of the commerce of the United States, and of its citizens, that multiple line coverage should be permitted to Fire, Marine and Casualty companies in the United States in contradistinction to the almost universal rule prevailing in the individual states that Fire and Marine companies may not write Casualty Insurance nor may Casualty companies write Fire and Marine Insurance.

ADVANTAGES OF COMPLETE COVERAGE

The reason why they came to this decision was twofold:

One was that the writing of all kinds of insurance, except Life, under one charter, would result in reduction in overhead costs, and that consequently, in the long run, companies enjoying such broad privileges would operate at a lower cost rate than would be the case if both the Casualty companies, and the Fire and Marine companies were each restricted to their own particular field.

The second was that it is more convenient to the assured, or his representative the broker, to deal with a company that can supply all his insurance needs than with one which can only supply a part of them.

(A)—*Lower Cost to the Companies and to the Assured*

Let us take the first of these arguments, namely, the lower cost, and examine it carefully, as was done by the Committee on Merchant Marine and Fisheries, to see if the argument of reduction in cost is a true one. For the purpose of making the matter clear let us take an exaggerated case as by that means the truth will appear more clearly, and let us suppose that instead of there being two classes of companies—one writing Fire and Marine and their allied hazards, and the other writing the Casualty classes (Accident, Casualty, Indemnity and Fidelity, and their allied classes as is the case at present)—that the laws of the various states provided that companies should only be granted a charter for one class of insurance, and let us see whither this will lead us. In such a case a number of companies would have to be chartered to write Marine Insurance; an additional number of companies would have to be chartered to write Fire Insurance; an additional number of companies would have to be chartered to write Windstorm insurance; others for Automobile insurance; others for earthquake hazards, etc. The Casualty companies with their numerous classes of coverage would certainly require to be split up into more than fourteen different classes of hazards, and consequently more than fourteen separate kinds of insurance companies would have to be chartered in order to give the full protection to the policyholder which he now enjoys.

Taking the Fire, the Marine and Casualty together there would have to be at least thirty different classes of companies chartered to give the coverage which is now afforded by the Casualty and the Fire and Marine groups. It does not require a very arithmetical mind to realize that the wages to capital, and the wages to officers, and the general overhead of thirty different classes of companies would be considerably greater than the overhead of two classes of companies.

If this holds true for two classes of companies it also holds true for one class of company. Were Fire, Marine and Casualty companies each allowed to write all the classes of risk allowed by the charters of both, it could not fail to reduce the expenses of the business:

The proof of this is shown in the growth of the large American department stores. There is no city of any size in the United States which does not have its big department store where one can buy anything from a package of tooth picks to an automobile. The reason why this is so is because on a large volume of sales the owner can afford to take a smaller percentage of profit than he can on a small volume of sales, and at the same time can afford to pay large salaries to secure the highest class of ability, with all that this implies in the way of efficiency in management, and reduction in cost of product.

(B)—Convenience to the Public

Let us come now to the next argument, and that is the convenience of the public, and let us ask ourselves this question: Would we, if we were an assured or a broker, prefer to have to deal with possibly thirty classes of insurance companies, and acquire thirty separate policies of insurance to protect us against all the hazards to which we are exposed, or would we prefer to deal with only two classes of companies, which two classes of companies could give us a coverage as equally sound and perfect and cheap as would be that of the thirty? If the answer to this proposition is "yes" then you are inevitably bound to answer "yes" to the second question—would you not prefer to deal with one class of companies instead of two?

Again, let us consider the average large department store. Why do people go there instead of going to fifteen or twenty different and separate stores to do their shopping, and the answer again is either (a) they get things cheaper in actual price, or (b) cheaper in convenience to themselves in the saving of their own time. Time is money to the shopper whether he is buying a paper of pins or a policy of insurance. The proof of it is the vast number of people who prefer to deal with a big department store rather than with a small special store, and the fact that the big store drives the small one out of business.

The same holds true of insurance. The assured, the agent and the broker, all prefer to deal with the company which can give them complete coverage, rather than deal with a number of companies able only to give partial coverage.

It is argued by some that the separation of insurance into three groups, to wit, Life, Fire and Marine, and Casualty and Surety is for the benefit of the insuring public, for the reason that the policyholder insuring with each class of company knows that the capital and all the assets of that company will be used for the payment of losses occasioned substantially by the same hazards against which he sought protection—hazards which have been carefully considered by the underwriter in determining the rate which the assured must pay.

He understands that the premiums which he and the other policyholders of the company contribute are to be used for that purpose, and not subjected to the liability or the payment of losses caused by an entirely different risk.

It seems to me that this reason is based on a misconception, unless it be maintained that the whole is less than the sum of all its parts.

Every citizen of the United States, or of a civilized country, needs and should have life insurance. Whether he knows it or not, he has paid for Fire and Marine and Casualty Insurance in some form or other; therefore, if the capital and all the assets of the marine insurance are pledged for the satisfaction of the claims of its marine policyholders, and if the capital and all the assets of the fire insurance are equally pledged for the satisfaction of its fire policyholders, and the capital and all the assets of the casualty companies are pledged in like manner, wherein is the policyholder any worse off if but one policy is issued for all these hazards instead of three policies, provided the capital and assets were adequate in each class to begin with?

Mathematically, it is undoubtedly true that the whole is but the sum of all its parts. Practically, however, it may be more than that, for is it not also true that bodies attract in proportion to their mass?

If we argue the contrary, we should logically dissolve these United States, and let each individual state apply its own assets to the benefit of its own citizens, nay, we should also dissolve the political organization of the states, and let each city and hamlet apply its own assets to its own necessities. Fortunately, we are wiser than this politically, and realize in spite of legislative economic heresies that "in union there is strength."

Tendencies in State Supervision of Insurance

By William Brosmith

Vice-President and General Counsel, The Travelers' Insurance Company; Chairman, Committee on Insurance Law of the American Bar Association

WHAT is called the American system for the supervision and regulation of the affairs of insurance companies is in itself but the development of a modern tendency. Hardly seventy years have elapsed since the state, which is generally credited with the conception, considered it to be a governmental duty in the public interest to treat insurance companies as a special class of private corporations and to subject them to particular, special laws for the regulation of their corporate relations and transactions with the state as well as with the public.

Steps Toward Insurance Regulation

Until the Massachusetts Act of 1852, insurance companies which transacted business in the United States, like other corporations, were required in a number of the states to report annually their financial condition to some designated officer. In some states insurance companies were also required to pay a tax upon premium income for certain specified purposes in addition to the usual property taxes. In other respects, however, insurance companies were neither supervised nor regulated nor were they subjected to requirements other than those which were applicable to all classes of corporations.

The limited authority conferred by the Massachusetts Act of 1852 was materially enlarged in 1855 and again in 1856. During this time a new and independent Board of Insurance Commissioners was created and supervision and regulation of insurance by the state really began. New York is credited with being the first state to follow the example of Massachusetts, but within a comparatively short time most of the states followed the lead of the New England commonwealth and made provision of one kind or another for the special and particular regulation and supervision of insurance.

In 1875 the Dominion of Canada enacted an Insurance Act which conferred upon the Minister of Finance of the Dominion, and under his direction and control upon the Superintendent of Insurance, powers and authority concerning insurance companies in their transactions throughout the Dominion which, although they differed from the insurance regulatory laws of our own states in certain respects, corresponded in their essential purposes to the laws which had been enacted in the same relations in the older states of the United States.

Just as the states followed the action of the Commonwealth of Massachusetts, so the Provincial Parliaments in the Dominion of Canada followed the example of the Dominion Parliament, but with a peculiar result due to the relations between the Dominion and Provincial governments and the limitations upon the legislative powers of the Dominion Parliament in the British North American Act. There exists now in Canada a dual supervision with more or less of an active conflict between the Dominion and Provincial authorities as to their respective rights and duties in the premises. This dual supervision serves as an illustration of what we might have had in the United States if the movement for Federal supervision had resulted in the necessary constitutional amendment and appropriate Federal legislation. We would have had country-wide Federal supervision for all companies added to the present kind of state supervision of each company in the state of its domicile.

ATTEMPTS TOWARD READJUSTMENT

Between 1852 and 1906 many changes were made in the insurance regulatory laws of the states and of the Dominion and as a rule with little regard to the advantages to be gained by uniformity of requirement, but it may be said in general that it was the legislative intention to include within the general scope of these laws the different kinds or classes of insurance companies, to provide standards of solvency and capital and investment requirements, to regulate the kinds of insurance which might be issued by the companies, to prescribe a standard fire policy, to require equitable treatment of policyholders, to authorize investigations into the affairs of the insurance companies and to give due publicity to the financial statements or reports of the insurance companies and to the activities in the public interest of the supervising officials.

If the points thus summarized had been cared for with some regard to uniformity of statutory provision and these laws had been administered with a like regard for uniformity of construction, it might reasonably have been expected that the interests of the public as well as those of the insurance companies under conditions then existing could be properly conserved. Of course, insurance development and emergencies might from time to time require additional legislation and even more stringent requirements.

REMEDIAL LEGISLATION

With the year 1906 came such an emergency and with it an era of remedial legislation. This followed the investigations of life and fire insurance in the State of New York, life insurance in the State of Wisconsin and the studies and surveys of a committee appointed in 1906 by a conference of governors, attorney-generals and insurance commissioners of the various states and territories.

Now, in addition to the regulations of the pre-reform era we have limitations upon the amount of expense which may be incurred to secure new life insurance or the renewal of old life insurances, limitations upon the amount of surplus which may be maintained by life insurance companies, limitations upon the amount of new life insurance to be acquired in any year by a life insurance company, regulations as to the distribution of dividends in life insurance, additional restrictions upon the investments of insurance companies, regulations of the premium rates in certain kinds of insurance other than life, standard provisions for life insurance policy contracts and for certain kinds of casualty insurance policy contracts and authority to supervising officials to supervise premium rating organizations with power to approve or disapprove as to adequacy and reasonableness the premium rates for certain kinds of insurance.

In addition to all of these there will be found in certain of the states laws calculated to fit purely local conditions and in the State of Texas a compulsory investment law under the provisions of which a life insurance company which transacts business in that state is required to invest and keep invested in Texas securities and in Texas real estate a sum of money equal to at least seventy-five per cent of the aggregate amount of the legal reserve required by the laws of the state of its domicile to be maintained on account of its policies of insurance in force written upon the lives of citizens of Texas.

ONLY PARTIAL ADOPTION

Notwithstanding the public sentiment which had been aroused by the investigations referred to, few of the states gave heed to the recommendations of the conference of governors, attorney-generals and insurance commissioners or of any of the investigating commissions by enacting in their entirety the bills as recommended. New York adopted the recommendations of the New York Investigating Committee; Wisconsin followed the recommendations of her own investigating commission. In the other states some of the measures were adopted in part, others materially altered and others again rejected altogether.

This varying legislative action must have been taken with the knowledge that the measures proposed were interrelated and that all were essential to the successful operation of the plans for reform. Here, again, the states missed an opportunity to serve the common good by adopting the same regulatory statutes in substantially the same phraseology.

LIMITS IMPOSED BY NEW YORK

There can be no question that some of these more recent regulatory laws were wise exercises of legislative authority and have already proved their value. Possibly, not one of these enactments in any of the states has been more helpful to insurance as well as to the public than the famous Section 97 of the insurance laws of the State of New York, which limits the expense which may be incurred in obtaining new life insurance, as well as the number and amount of renewal commissions which may be paid to agents as remuneration for maintaining such life insurance in force. In this section New York disclosed a way to make legislation effective beyond the limits of the state and obligatory upon insurance companies located in other jurisdictions for a life insurance corporation of another state or country which shall not conduct its business everywhere within the limitations, and in accordance with the requirements imposed by this section shall not be permitted to do business in the State of New York.

This legislative device, which has aroused resentment on the part of some supervising officials and some companies, has been helpful in many ways. It has made for economy and is largely responsible for the fact that life insurance companies which were hampered in the days of unhealthy and unrestricted competition have grown to be strong and influential factors in the field of life insurance protection.

For the instant purpose the foregoing statement of the origin and general scope of the system will suffice, but of necessity only the outstanding features have been indicated. Very many phases of supervision which involve burdensome requirements wholly unessential to the prime object have been passed over.

OPINIONS RE GOVERNMENT CONTROL

Any system of governmental control which contemplates operation by forty-eight states, each of which prescribes its own rules and regulations, many of which in major as well as in minor respects differ from those of each of the other states, naturally will give rise to controversies and criticisms. There have been many controversies between company managers and insurance supervising officials. This system has been overpraised at times and usually by governmental representatives and has been criticised both fairly and unfairly by company managers and by writers without either governmental or company relations, but, whatever the nature of these controversies, or the provocation for the criticism, or the justification for the praise, there can be no real difference as to the propriety and the necessity for governmental regulation of corporations, the affairs of which so largely affect the public interest.

What the regulations mean in a given case and whether or not the supervising official when interfering with the affairs of an insurance company or imposing penalties upon individuals under authority of law is acting within the law wisely and judiciously, or whether or not a company through its officers or agents capriciously obstructs the public officials in the performance of their duties or fails to comply with lawful obligations, are fair subjects for discussion. But after seventy years of governmental regulation the propriety and the necessity for state regulation should be treated as adjudicated. This, however, is not always conceded. A learned writer on matters pertaining to insurance, even after the investigation hereinbefore referred to, declared after a critical review of the system and operations that:

> Nowhere in our public life can be found better examples of inefficiency than in our state departments of insurance. The reason for this is not difficult to discover. Like all the other state positions, they have been made the spoils of the politician. In a score of states the commissioner of insurance, as the head of the department of insurance is usually called, is elected by a direct vote of the people. Under such a condition the official is bound to be a politician. In several other states he is elected by the legislature, and in the remaining states he is appointed by the governor, in each case with no better results than when elected directly by the people.
>
> Summing up then the main contentions of this paper, the conclusion is that the indictment against state supervision can be sustained. It has failed seriously in the half century that it has been on trial. This failure has been due partly to the fact that the states have directed their activities along wrong lines and partly to the fact that there are conflicting interests among the states. The remedy which has been suggested is in laws securing publicity and responsibility, these laws to be enforced by a national department of insurance.

He was in error in some of his statements as to facts and unfair and wrong in his summing up.

At a somewhat earlier date another writer, then a distinguished member of the National Convention of Insurance Commissioners, declared:

> Study the insurance laws of any state which has adopted general and extended regulations. Superficial examination instinctively inspires condemnation, for the lack of system and for the seeming inconsistencies, weaknesses, follies and unnecessary exactions and hardships. Deeper study, that gathers the history of all these laws, convinces that they were not made in moments of thoughtlessness or unprovoked prejudice, but, in the main, deliberately and after infinite, laborious consideration. They have crystallized the wisdom of the fathers, who formulated and developed our institutions. Like those institutions, the insurance laws are not without imperfections, but we take them, as we take this great country, filled with reverence, admiration and respect for the industry, genius, wisdom and patriotism of the authors and builders of our Republic, so splendid in its whole that the defects seem trifling.

It would be strange if later observation and experience have not inclined the author of these words to modify his opinion. A more moderate and more convincing opinion in this same connection is that expressed quite recently in an address to a body of lawyers by a supervising official of an important Northwestern state:

If state supervision breaks down and the public welfare and convenience demand a change, I have no doubt some way of effecting the change will be discovered. However, when one considers the difficulties of securing absolute uniformity of laws and practices in the different states upon any given subject, it must be admitted that great results have been accomplished relative to the supervision of insurance. The situation is far from perfect but many of the early annoyances and abuses have been done away with and unquestionably a far better understanding exists today between the business and the public than ever before. I think that both companies and commissioners realize that the true test of the usefulness of a business is the quality of the service that that business renders the public and that public supervision and control should be administered and exercised in such manner and by such instrumentalities as will secure to the public the best and most economical service, the greatest safety and protection, and will secure for the business adequate returns to maintain its safety and solvency and bring it as much of the public confidence as it proves itself to be entitled to, at the same time causing it the minimum of inconvenience.

Furthermore, let me say that I think we all realize that when a business becomes so highly developed that it reaches a point where its interests and purposes coincide with the interests of the public, public regulation becomes public co-operation.

PRESENT DAY TENDENCIES

Whatever may be the ultimate right judgment as to the value and merits or demerits of state supervision, the system is in operation and under existing or improved methods will continue to operate. The present day tendencies are in the direction of the extension of the authority of supervising officials and there will be more rather than less of regulation. There is a strong sentiment, which can hardly be called a movement, in favor of uniform requirements in all matters of substance and the elimination of unessential and conflicting statutory requirements.

There is a strong tendency in the direction of rate regulation to the end that premiums for insurances other than life may be adjusted scientifically and uniformly to correspond to the hazards assumed by the insuring company. There is also a strong tendency to improve existing laws in the matter of requirements for reserves which are set aside to protect the liabilities assumed by the companies. Many of the present reserve requirements are not suited to the risks which the companies are now called upon to assume. The reserves called for are either under or over the liabilities and, although the total amount of reserves may be largely in excess of the liabilities, nevertheless the annual statement or report may not disclose the actual condition.

There should be a tendency to reduce the burdens of taxation which now bear so heavily upon the companies and ultimately upon the policyholders. There should also be a tendency to so modify departmental fees and charges that the amount collected will fairly represent the cost of supervision and not result in overpayments so large in amount as to form a considerable part of the revenue of the state. This is a method of acquiring revenue by indirect taxation which is not to be commended.

For years the National Convention of Insurance Commissioners has recognized the necessity for revising the insurance laws of the several states and has been an important factor in bringing about such measure of uniformity in insurance laws as now exists, but when compared with the results achieved in the general direction of uniformity by the Commissioners on Uniform State Laws the results have been disappointing. This is surprising because the National Convention of

Insurance Commissioners, the insurance companies and the policyholders should be more influential in this regard than the Commissioners on Uniform State Laws.

CONTRIBUTION OF AMERICAN BAR ASSOCIATION

In the interests of uniformity of requirement the American Bar Association through its Committee on Insurance Laws is engaged in the preparation of a Code of Statutory Provisions relating to the Business of Insurance, which is intended to emphasize the necessity for a revision of many of the existing Codes and to indicate to legislators and others interested the essentials for the uniform regulation of insurance and the protection of the public interests.

This Code, when completed, is not likely to be adopted by any of the older states, but may find its way, in whole or in part, into the statute books of the states, the laws of which are now confessedly imperfect and inadequate. The effort of the American Bar Association is to serve the public as well as the insurance companies and the state by collating provisions which have borne the test of time and experience and by suggesting in the way of new legislation ways and means by which the powers of insurance companies may be so classified and enlarged as to meet the public demand for full insurance protection.

Special Insurance Taxes

By JAMES L. MADDEN, J.D.

Manager, Insurance Department, Chamber of Commerce of the United States

EVERY policyholder pays special indirect taxes. Comparatively few of them realize this. The original intention of these special taxes was to maintain the state insurance departments. A survey covering every state in the Union indicates that only $1.00 out of every $27.00 of these special insurance taxes went for this purpose. The rest was used for state functions for which the policyholders had already been taxed as citizens. These state functions had no particular relationship to policyholders as a class, any more than to any other type of taxpayers. Special insurance taxes are hidden in the premiums and the insurance companies are made tax collectors by the states. One of the arguments in favor of these taxes is that they are easily collected. Furthermore, they are "painless," because they are unknown to policyholders. Yet they are just as real as if they were direct taxes.

GROSS AMOUNT INCREASES

Year by year the gross amount of these special imposts paid by policyholders has increased. In 1925 they amounted to $72,839,721. This would pay an annual premium for more than 4,800,000 ordinary life insurance policies issued at the age of twenty-five for $1000 each, or would buy fire insurance coverage for one year on $8,184,000,000 worth of property at the average rate of eighty-nine cents per $100. Contrasting this figure, $72,839,721, with the total amount collected from policyholders in 1922, we find that it is about $20,000,000 higher, yet the increase in the amount of money spent for the maintenance of state insurance departments was just a little over $337,000 during this time.

The total amount of the imposts set forth above is an understatement of the actual amount collected from policyholders. It does not contain the sums imposed by counties and municipalities in states permitting local jurisdictions to put special taxes upon insurance. Policyholders living in the following states are liable to these extra taxes in addition to the other special taxes required by their states: Alabama, Florida, Georgia, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Missouri, Nebraska, Nevada, Ohio, South Carolina, West Virginia and Wyoming. Neither do these figures include the cost of collection.

TREND OF SPECIAL INSURANCE TAXES

The proportion of special insurance taxes collected from policyholders which is spent for service to them has been constantly declining from 6.48 per cent in 1915 until it amounted to only 3.65 per cent in 1925. In that year 96.35 per cent of these special imposts was spent for general state purposes. There is given below the percentage of the total receipts from special insurance taxes and fees used for maintenance of state insurance departments by years from 1915 to 1925 inclusive. These figures are based on data from the District of Columbia and all states with two exceptions. Figures for Louisiana are not available for any of the years and figures for Pennsylvania were included only from 1922 through 1925.

Chart A which is plotted from these data clearly indicates the downward trend of the percentage of imposts spent for policyholders' service.

PERCENTAGE SPENT FOR SERVICE TO POLICYHOLDERS

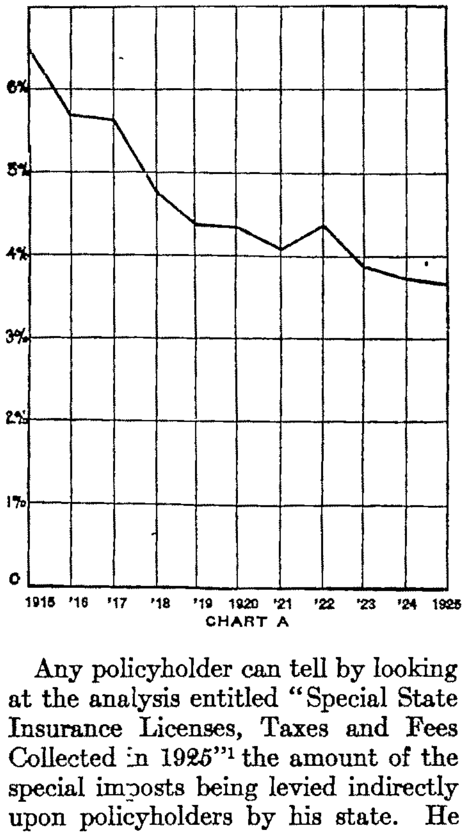

CHART A

Any policyholder can tell by looking at the analysis entitled "Special State Insurance Licenses, Taxes and Fees Collected in 1925"[1] the amount of the special imposts being levied indirectly upon policyholders by his state. He can learn the amount of these imposts which goes for special service to him as a policyholder, the remainder representing contributions to the general state funds. Analyzing the record of the different states, we find that thirty of them spent a smaller proportion for service to policyholders in 1925 than during the preceding year, while eighteen show increases. None showed a material increase and in the vast majority the increases were extremely small. In order to indicate the trend by years, taking the country as a whole, the following summary may be of interest. It shows the number of states increasing or decreasing the proportion of special state insurance taxes used for service to policyholders as compared with the previous year.

	1922	1923	1924	1925
States decreasing. . . .	18	29	33	29
States increasing. . . .	29	18	13	19
States showing no change. .		1	2	. .
States giving no data. . . .	2	1	1	1
Total states and D. C. .	49	49	49	49

DEPARTMENTAL EXPENSES VS. SPECIAL TAXES

The graph, Chart B, indicates how much faster special insurance taxes and fees have increased, during the eleven-year period 1915–25 inclusive, than insurance departmental expenses. The 1915 figures are used as a base and designated as 100. Figures for all states and the District of Columbia are included, with the exception of Louisiana and Pennsylvania, as data for these two states were not obtainable for the entire period.

TREND OF TAXES AND EXPENSES

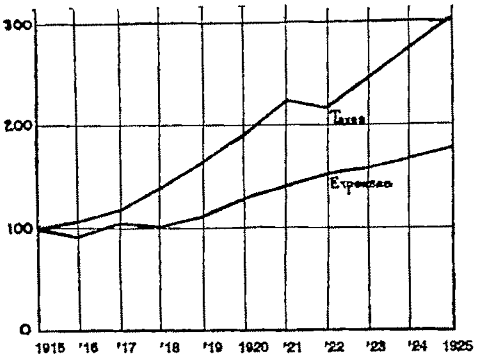

CHART B

WHO PAYS THE TAXES?

Although the states impose upon insurance companies the responsibility for payment of these various special taxes, the companies necessarily charge them to overhead expense which is passed on to policyholders. The result is the policyholder pays a larger sum for his insurance or else he decides, to his own detriment, to carry a smaller amount because of the increased cost.

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[1] *See* p. 200.

In addition to the taxes themselves, the cost of collecting and turning these monies over to the proper authorities creates a large extra expense which must be paid by policyholders. In other words, the state not only imposes these taxes upon policyholders, but also makes them pay the collection expenses.

COST OF COLLECTION

It has been estimated that the cost of collecting this great variety of taxes runs as high as ten to twenty per cent of the amount of the taxes, according to the type of insurance. The following illustration will show how these expenses occur: A fire insurance company operating in a number of states must keep its records so that the premium taxes and all the above mentioned variety of other special levies may be computed for each state. In some states it may also have to compute upon different bases the amount which it owes each city and town. As it is essential for the company to keep pace with the manifold changes in the tax laws of our various states, experts must be employed.

The cost of the clerical, administrative and other overhead expenses incurred in collecting these taxes as well as the commission paid to agents on that portion of the premium representing taxes must be borne by the policyholders, even though it does not show up separately from other overhead expenses in the insurance company's balance sheet.

LACK OF UNIFORM METHODS

The taxation methods of the various states are quite diverse. In most cases the systems used are unsound, besides placing a very heavy burden upon policyholders. So the reader may know the types of taxation which have been adopted in his state, a table has been prepared which shows the usual forms of taxes levied upon fire and life companies in each state of the Union.[2] It is worthwhile to note the dissimilarity between the processes of the various states in levying special taxes as well as to emphasize the unsound economic character of the majority of these levies.

The Premium Tax

Probably the most unjust special tax paid by policyholders is the premium tax. The percentage collected varies. In some states it is based on the gross premiums collected; in a number of others, it is based on the gross premiums less return and reinsurance premiums; while in still others, the amount on which the taxes will be levied is determined in ways different from either of these.

When return premiums or dividends to policyholders are not deducted, a tax has been placed upon funds which are not used for providing protection and which actually belong to the policyholder. When a deduction is not permitted for reinsurance premiums paid to a company to which part of the insurance has been ceded, and that company also pays a tax on the premiums it received from the direct writing company, there is double taxation. Many states allow no credit for insurance ceded to non-admitted companies, while several levy an even higher rate on business ceded to unauthorized companies.

Inasmuch as the tax levied upon the

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[2] *See* p. 201.

gross receipts of an insurance company is similar in its effect to the tax upon the gross turnover of any other business, this fact must be kept in mind in any comparison that is made between taxes on insurance and on such other business. To be comparable, the tax on industrial plants or mercantile establishments should be on gross sales. A tax of three or four per cent on the gross sales of a business or on the average deposits in a bank, however, would result in a wave of protest. Yet the tax on insurance is just as real, although not so apparent.

As the premium tax must be paid whether or not the company is operating at a profit, it is thus levied on losses and indebtedness. Since this will tend to discourage rather than promote the growth of insurance, it is necessarily an unsound means of taxation. Furthermore, the premium tax is inequitable:

(a) As between policyholders—since this tax is levied upon premiums, it is evident that the premium paid by a life insurance policyholder having one of the higher premium forms of policies, such as endowment, or a policy taken out at a late age, is subject to a greater tax. For example, we find by using the rates of one life insurance company that its premium on an ordinary life policy issued to a man age forty-seven would be subject to over twice as much tax as on a similar policy issued to a man age twenty-five, because the annual premium is a little more than double for the older age. No other form of tax is levied so as to be dependent upon age, and there appears to be no justification for a form of taxation which has such effect.

Because of the extra mortality of industrial policyholders and the heavier expense loading which is necessary to meet the cost incidental to the method of collecting premiums, the premium rate is higher for industrial than for ordinary insurance. In view of the fact that the taxes are based on premiums, the industrial policyholders as a class consequently pay a greater amount of tax in relation to the amount of insurance than the holders of ordinary policies. The individual, therefore, who is badly in need of insurance, but must carry it on a weekly payment plan because of his financial circumstances, is thus penalized by the state. This is obviously unfair.

The same situation as regards discrimination between policyholders applies equally well to the holders of fire or casualty insurance contracts on risks having a greater hazard. For example, the manufacturer of a product which is inflammable must pay a larger tax in proportion to the amount of insurance carried than the manufacturer of a product to which no fire hazard is attached.

(b) As between policyholders in different states—when different states charge varying rates on premiums collected by life insurance companies within their borders, the policyholders in states with the lower rates of tax must contribute to pay the taxes in states where the rates are higher.

In some states we find that the state legislators use the gross premium method of life insurance taxation as an inducement for the companies to invest their assets within the state. In Colorado, for example, no tax is payable if fifty per cent of the total assets of a company are invested there, otherwise, the tax is two per cent on gross premiums. In North Carolina a gross premium tax of two and one-half per cent is imposed which may be reduced to one and one-fourth per cent if the companies invest in that state twenty-five per cent of their total assets. In the event the insurance companies invest seventy-five per cent of these assets, the rate is reduced to one-quarter of one per cent and the companies' license fee is also lessened. Under the so-called Robertson law in Texas, the rate is three per cent on gross premium receipts subject to reduction to 2 6/10 per cent when investments in Texas securities equal thirty per cent of Texas reserves, 2 3/10 per cent when they equal sixty per cent and two per cent when they equal seventy-five per cent of such reserves.

Georgia, Idaho and South Carolina also reduce the rate according to the amount of reserve invested in their respective states. Since different companies may as a result be paying different rates of taxation, discrimination between policyholders in the same state is inevitable. While the illustrations which have been cited apply to life insurance premiums, the same method of taxation is used for premiums on other types of coverage.

The investment of insurance assets should not be confined by legislation within state borders. One of the fundamental rules of insurance finance is that there should be a broad distribution of risk in making investments. Safety of principal and an assured interest return are primary considerations. Reduction in premium taxes which must ultimately be paid by policyholders should not be held out as an inducement for the violation of fundamental principles. If it is, policyholders may pay a far greater sum through insecurity or lower yield of invested assets than the amount of the unjust premium taxes.

License Tax and Tax for Filing Annual Statement

In many states each company is required to pay an annual license tax before it can operate. This ranges from a very small amount to $300, as in Maryland and Wisconsin. In the latter state the fee is in lieu of all premium taxes except retaliatory taxes. A fee is also charged for filing the company's annual statement. This likewise varies in amount, running as high as $100.

While these fees may be comparatively small in some states, it must not be forgotten that many companies transact business in a number of states and, therefore, have a multiplicity of such fees to pay. The total amount collected in this manner is therefore large.

Even though insurance companies, which have their own agencies or brokerage contracts, have paid their annual license fees, they cannot procure business in most states until their representatives, agents or brokers pay individual annual license fees.

Agents' and Brokers' Licenses

The regulations as to licensing agents and brokers are quite different in the various states. In most states the local agent pays a fee ranging generally between $1.00 and $10.00. Georgia charges a special or general agent of a life insurance company an annual license fee of $100. Several other states do likewise. There is a constantly increasing number of states which charge general, special agents' and adjusters' license fees. The practice of charging for brokers' licenses is not universal, but in a number of states which do so the rate is very high.

Publication Fee

Many states require that a company's certificate of authority, annual statement, or abstract of annual statement be published a given number of times in a certain designated class of papers. In some cases this is attended to by the state at the company's expense—while in others the company itself must make provision for such publication. The number of times and the number of papers in which publication must be made vary in different states. For example, the company's certificate of authority must be published in Ohio in each county where there is an agency. In Minnesota, an abstract of the annual statement must be printed three times in one newspaper in the three most populous counties. The fees charged may be the actual publication expense, the authorized rate for legal notices, or an amount determined by some other method.

It does not seem the publication of an annual statement or the company's certificate of authority should be required. Inasmuch as the great majority of people do not read and cannot understand these statements, the money paid for printing them is a useless expenditure. In the event a policyholder or prospective policyholder desires detailed information regarding any particular company, he is always able to obtain same from the company itself or from the insurance commissioner of his state. Since the fees paid by a company which operates in many states are quite large with no resultant good to the policyholders who are obliged to pay them, there appears to be no justification whatever for their continuance.

Fire Marshal Tax

A great many states levy a tax based on fire insurance premiums, usually ranging between one-tenth and one-half of one per cent to raise funds for supporting the office of the state fire marshal. As the purpose of this office is to investigate fires, prosecute arson cases and conduct fire prevention activities, it is of general service to all property owners in the state. The taxation of fire insurance policyholders alone for the purpose of supporting it is inequitable since non-policyholders profit just as much from its operation.

In Ohio, for example, there is a tax of one-half of one per cent of the gross premium on fire insurance for the maintenance of the fire marshal's office, but in Ohio the duties of the fire marshal are not even limited to the work of preventing and investigating fires. He must go around among the eating houses and inspect them and make certain that they conduct their affairs in a manner conducive to public health and happiness. He must make sure that the hotels are kept clean and sanitary, and he must consider the comfort of the weary traveler overtaken by night within the borders of the state. To such he must insure the full protection of the law governing the length of sheets upon the beds. The fire insurance policyholders of the State of Ohio are paying the fire marshal for performing these and other public services—the policyholders alone and no other class of citizens.

Fire Department Tax

Taxes ranging between one-half and two per cent of fire insurance premiums are collected in a number of states for the purpose of supporting local fire departments and firemen's relief funds. The necessity of maintaining adequate fire departments and of providing relief funds for injured firemen is recognized, but as in the case of the fire marshal's tax, it is unfair that one particular group of citizens should be singled out to bear the cost of a service which benefits all residents.

Special taxes levied for the purpose of operating salvage corps or fire patrols are subject to the same criticism. It is unquestionable that these organizations are of real value in saving property threatened by fire, and salvaging that which might otherwise have been a total loss. In their operations, however, they make no distinction between policyholders and non-policyholders, but the policyholders pay for their support. For example, the City of Philadelphia collects a one and one-fourth per cent tax on net fire insurance premiums which it uses to operate the fire patrol.

Retaliatory Tax

The great majority of states have retaliatory legislation which usually applies to all forms of licenses, taxes and fees. Although the retaliatory tax is designed to penalize the companies of a state where a higher rate is charged, it may indirectly recoil upon companies and citizens in its own state. Its citizens may be policyholders of the company on which the tax is levied. For this reason, the existence of retaliatory laws in other states may at times have been a contributing factor in persuading a legislature against a proposal for an increase in the premium tax rate.

Reciprocal Tax

A very commendable system of taxation has been adopted by several states for the upbuilding of their domestic institutions by what is known as reciprocal taxation. Under this method any favorable treatment received by a domestic company in other states is reciprocated. The taxes and restrictions are modified for the companies of those states whose laws accord, to the domestic company, treatment less expensive or severe than the law which the initial state prescribed for the conduct and government of companies generally.

The term retaliatory taxation is often wrongly designated as reciprocal. A favor is reciprocated and a wrong retaliated. A state having reciprocal laws reciprocates favors shown its domestic companies by other states and thereby encourages and assists in the growth and stability of its domestic institutions.

County and Municipal Licenses and Taxes

Taxation of insurance by counties or municipalities except on real property is forbidden by most states. There are a number which permit these local jurisdictions to levy taxes on insurance companies and on their agents. The methods used by these various localities are quite diverse. For example, in Alabama each city may levy upon life insurance companies a certain basic fee dependent upon the size of the city, as well as a one per cent tax on gross premiums collected therein on business issued during the tax period.

In the State of Mississippi there is a body known as the Levee Commissioners of the Yazoo-Mississippi Delta Levee District. By act of the legislature this Levee District is authorized and levies the same privilege taxes on insurance companies that are levied by the state Consequently, in addition to paying $200 per annum for the privilege of doing business in the State of Mississippi, companies in the Yazoo-Mississippi Delta Levee District, comprising ten counties, must pay an additional $200 for the privilege of maintaining an office and agents in the Levee District.

At the present time there are approximately 125 or 130 cities and towns in Missouri which collect a municipal license tax from insurance companies amounting to one per cent or more of the premiums received.

Using fire insurance as an illustration, it was recently brought out in a hearing in Kentucky that municipal tax charges against fire insuranee companies range from $5.00 to $75,028,75. These taxes are, of course, being paid by policyholders in addition to the special taxes imposed by the state. It was also developed that the cost of maintaining a salvage service for Louisville was assessed upon the insurance companies and paid by the policyholders. Such salvage services are designed to keep at a minimum the amount of property damaged as a result of fire or water used in fighting fire. This is a municipal function just as much as the maintenance of fire departments or health departments. There are other cities which indirectly tax policyholders for the maintenance of salvage corps, organizations which function not only in behalf of policyholders but the community generally. In effect, the policyholders, a special class of citizens, are maintaining these organizations for the protection of the general community.

Miscellaneous Taxes

Numerous illustrations of other types of taxes may be cited. For example, in Kansas there is a flat tax on every insurance company of $50 for the school fund. In Oklahoma all life insurance premium taxes are segregated to a fund for the support of the schools. There appears to be no special reason why insurance companies should be called upon to maintain the schools by direct taxation, any more than jewelers as a class should be so taxed. In the end, the policyholder and not the company pays it.

RECOMMENDATIONS

The Advisory Committee to the Insurance Department of the National Chamber has carefully reviewed the existing special insurance taxation situation as related to the interests of policyholders. The committee did not consider taxes paid by insurance companies in common with other forms of business. The following recommendations were made:

Special taxation should be limited to such a total as will adequately support the state's insurance departmental supervision. Any excess is unjust in that it is levied on only a portion of the public and is discriminatory against those who believe in thrift and protection and is wasteful in that it is obtained at a collection cost far beyond that of regular taxes. For the policyholders' benefit these evils should be corrected. The following specific recommendations are made toward this end:

I. While the Insurance Advisory Committee does not believe in the equity or justice of the present system of premium taxation, it nevertheless thinks this system may have to be continued for some time to come. In this event, the Insurance Advisory Committee believes—

(1) There should be a material reduction in the amount of premium taxes collected. As indicated above, these should be limited to such a total as will adequately support the state's insurance departmental supervision.

(2) In fire and casualty insurance, reinsurance and returned premiums, dividends to policyholders and losses should be deducted from gross premiums before the rate of taxation is applied to the premium income.

(3) In life insurance, reinsurance, cash and applied dividends to policyholders, matured losses, endowment and cash surrender values should be deducted from gross premiums before the rate of taxation is applied to the premium income.

(4) The above method of taxation should be made uniform throughout the country.

II. The Insurance Advisory Committee thinks it highly desirable to have the following licenses, taxes and fees consolidated into a single payment:

1. License taxes.
2. Taxes for filing annual statements.
3. Publication fees.
4. Fire marshal taxes.
5. Fire department and relief fund taxes.
6. Agents' and brokers' licenses.
7. Retaliatory taxes.
8. Municipal licenses and taxes relative to fire insurance.
9. Other miscellaneous fees, such as those for supporting salvage corps, etc.

The amount of the single payment to replace the numerous state charges above mentioned should not be higher than the corresponding franchise or capital stock tax levied upon other business corporations.

III. It is recommended that the State Insurance Department be supported by an appropriation from the legislature and not from the numerous types of taxes and fees, the abolishment of which has been recommended. The state insurance department should primarily be considered as a service organization rather than a means of revenue.

The United States Chamber of Commerce is definitely opposed to the existing system for special state insurance taxes. In 1924 member organizations committed it to the following resolution:

> Special state taxes now levied on policyholders through insurance companies should not be considered as a source of general revenue but should be reduced to the total in each state which will adequately support such state's departmental supervision, and a uniform principle of taxing the holders of insurance should be adopted throughout the states.

SPECIAL STATE INSURANCE LICENSES, TAXES AND FEES COLLECTED IN 1925

States	Licenses, Taxes and Fees Collected by—		Total (so far as Reported)	Expenses of Insurance Department	Ratio Spent for Service to Policyholders	Ratio Used for Other State Purposes
	State Insurance Department	State Treasurer or Other Official				
					Per cent	*Per cent*
Alabama	$768,020	$2,900	$770,920	$26,687	3.46	96.54
Arizona	258,488	....	258,488	4,700	1.82	98.18
Arkansas	516,607	47,250	563,857	17,500	3.10	96.90
California	219,992	4,368,885	4,588,877	66,566	1 45	98.55
Colorado	642,687	....	642,687	40,884	6 36	93.64
Connecticut	764,289	4,412,173	5,176,462	54,336	1 05	98.95
Delaware	148,175	....	148,175	5,700	3 85	96.15
District of Columbia	....	299,754	299,754	19,914	6.64	93.36
Florida	....	[a] 617,573	617,573	5,576	.90	99.10
Georgia	769,917	....	769,917	12,553	1.63	98.37
Idaho	212,162	....	212,162	12,427	5.86	94.14
Illinois	5,175,055	646,149	5,821,204	188,929	3.25	96.75
Indiana	1,657,837	....	1,657,837	67,673	4.08	95.92
Iowa	183,641	1,220,066	1,403,707	110,609	7.88	92.12
Kansas	1,031,605	....	1,031,605	48,952	4.75	95.25
Kentucky	943,934	....	943,934	40,793	4.32	95.68
Louisiana	[b] 85,000	....	85,000	[c]	....	.....
Maine	44,828	404,496	449,324	12,066	2.69	97.31
Maryland	898,956	....	898,956	46,998	5 23	94.77
Massachusetts	306,881	2,653,564	2,960,445	122,588	4.14	95.86
Michigan	2,554,443	25,508	2,579,951	89,796	3.48	96 52
Minnesota	134,916	1,479,911	1,614,827	61,914	3.83	96 17
Mississippi	609,187	....	609,187	8,500	1.40	98.60
Missouri	132,852	2,203,985	2,336,837	85,553	3 66	96.34
Montana	285,562	13,475	299,037	11,335	3 79	96 21
Nebraska	468,828	22,382	491,210	29,996	6.11	93 89
Nevada	24,444	5,000	29,444	[b] 1,800	6.11	93.89
New Hampshire	32,417	285,691	318,108	9,880	3.11	96.89
New Jersey	1,736,672	1,716,866	3,453,538	199,345	5 77	94 23
New Mexico	108,143	....	108,143	5,466	5.05	94 95
New York	2,233,320	5,194,231	7,427,551	629,691	8.48	91.52
North Carolina	1,434,465	....	1,434,465	31,861	2.22	97.78
North Dakota	278,808	[b] 1,500	280,308	15,135	5.40	94.60
Ohio	230,919	4,438,018	4,668,937	78,250	1.68	98 32
Oklahoma	811,871	131,792	943,663	33,628	3 56	96.44
Oregon	665,819	....	665,819	34,131	5 13	94.87
Pennsylvania	5,561,838	261,803	5,823,641	110,949	1.91	98.09
Rhode Island	23,341	514,688	538,029	15,613	2.90	97.10
South Carolina	405,471	....	405,471	18,468	4 55	95.45
South Dakota	43,835	363,493	407,328	15,313	3.76	96.24
Tennessee	1,321,440	....	1,321,440	29,080	2 20	97.80
Texas	2,041,003	....	2,041,003	34,701	1 70	98.30
Utah	201,005	....	201,005	7,529	3.75	96.25
Vermont	26,010	261,231	287,241	7,385	2.57	97.43
Virginia	63,753	1,288 339	1,352,092	55,243	4.09	95.91
Washington	1,079,800	....	1,079,800	63,776	5.91	94.09
West Virginia	760,908	....	760,908	15,297	2.01	97 99
Wisconsin	1,985,530	....	1,985,530	46,236	2 33	97.67
Wyoming	124,324	....	124,324	[b] 10,000	8 04	91.96
Totals—1925	$39,958,998	$32,880 723	$72,839,721	$2,661,317	3 65	96.35
Totals—1924	34,858,928	32,872 643	67,731,570	[d] 2,513,467	[d] 3.71	[d] 96.29
Totals—1923	26,550,951	33,190 878	59,741,828	2,314,565	3.87	96.13
Totals—1922	24,659,601	28,356.198	53,015,799	2,323,889	4 37	95.63

a—Capital stock tax not included. b—Estimated by Insurance Commissioner. c—Expenses not segregated.

d—The difference between this figure and the 1924 total shown in Bulletin No 21 is due to a correction in the North Carolina figure, received from the Insurance Commissioner of that state since the publication of Bulletin No. 21.

NOTE.—While the tabulation is complete insofar as insurance department expenses are concerned, except for Louisiana, it is important to note that in the case of some states all the taxes, licenses and fees are not included. As regards state levies, this is because part of them are paid to state treasurers and other officials whose books may be kept in such manner as to render it impossible to segregate the insurance data. As for the amounts collected by counties and municipalities in those states permitting local jurisdictions to tax insurance companies and their agents, it was found no central state agency had compiled the information. Among the states where local taxes or fees were levied but the amounts were unavailable are Alabama, Florida, Georgia, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Missouri, Nebraska, Nevada, Ohio, South Carolina, West Virginia and Wyoming.

Types of Special State Insurance Licenses, Taxes and Fees

States	Fire								Life							
	Premium Tax	License Tax (Company)	Fee for Filing Annual Statement	Fire Department Tax	Fire Marshal Tax	Agent's License Fees	Publication Fees	Retaliatory Taxes, Fees, etc	Premium Tax	License Tax (Company)	Fee for Filing Annual Statement	Agent's License Fees	Publication Fees	Charge for Company Examination	(Local Taxes Other than Property)	Retaliatory Taxes, Fees, etc.
Alabama	Y	Y	Y	F	Y	Y	Y	Y	Y	Y	R	Y	Y	Y	Y	Y
Arizona	Y	Y	Y	..	..	Y	.	Y	Y	Y	Y	Y	..	Y	.	Y
Arkansas	Y	Y	Y	..	.	Y	..	.	Y	Y	Y	Y	..	..	..	Ya
California	Y	Y	Y	.	..	Y	..	Y	Y	Y	Y	Y	Y	Y	.	Y
Colorado	Y	Y	Y	..	..	Y	.	Y	Y	Y	Y	Y	Y	Y	..	Y
Connecticut	Y & R	Y	Y	..	..	Y	.	Y	R	Y	Y	Y	..	Y	.	Y
Delaware	Y	Y	Y	Y	..	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y
District of Columbia	Y	Y	.		..	Y	Y	.	Y	Y	..	Y	Y	. ..	.	.
Florida	Y	Y	Y	..	..	Y	..	.	Y	Y	Y	Y	..	Y	Y	..
Georgia	Y	Y	Y	..	Y	Y	Y	Y	Y	Y	Y	Yb	Y	Y	Y	Y
Idaho	Y	Y	Y	.		Y	.	.	Y	Y	Y	Y	Y	Y	..	.
Illinois	Y	..	Y	Y	Y	Y	Y	Y	Y	R	Y	Y	Y	Y	..	Y
Indiana	Y	..	Y	.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y
Iowa	Y	..	Y	..	..	Y	Y	Y	Y	Y	Y	Y	.	Y		Y
Kansas	Y	..	Y	Y	Y	Y	..	Y	Y	Rc	Y	Y	.	Y	Y	Y
Kentucky	Y	..	Y	.	..	Y	..	Y	Y	Y	Y	Y	..	Y	Y	Y
Louisiana	Y	Y	Y	Y	Y	Y	..	Y	Y	Y	Y	Y	Y	Y	Y	Y
Maine	Y	Y	R	..	..	Y	Y	Y	Y	Y	R	Y	.	Y	.	Y
Maryland	Y	Y	Y	..	..	Y	..	Y	Y	Y	Y	Y	Y	Y		Y
Massachusetts	Y	.	Y	..	..	Y	.	Y	Rd	R	Y	Y	..	Y	..	Y
Michigan	Y	R	Y	..	.	Y	..	Y	Y	R	Y	Y	..	Y	..	Y
Minnesota	Y	Y	Y	..	Y	Y		Y	Y	Y	Y	Y	Y	Y	..	Y
Mississippi	Y	Y	Y	..	Y	Y	Y	.	Y	Y	Y	Y	Y	Y	Y	.
Missouri	Y	Y	Y	..	..	Y	.	Y	Y	R	Y	Y	.	Y	Y	Y
Montana	Y	Y	Y	..	Y	Y	Y	Y	Y	R	Y	Y	Y	Y	.	Y
Nebraska	R	Y	Y	Y	Y	Y	.	Y	Y	Y	Y	Y	..	Y	Y	Y
Nevada	.	Y	Y	.	.	Y	Y	.	.	Y	Y	Y	Y	Y	Y	
New Hampshire	Y	Y	Y	.	..	Y	.	Y	Y	Y	Y	Y	.	R	..	Y
New Jersey	Y	.	Y	Y	.	Y	.	Y	R	R	Y	Y	.	Y	.	Y
New Mexico	Y	Y	Y	.	..	Y	Y	Y	Y	Y	Y	Y	Y	Y	.	Y
New York	Y	R	Y	Y	.	R	..	Y	Y	R	Ye	R	R	Y	..	Y
North Carolina	Y	Y	Y	Y	.	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y
North Dakota	Yf	Y	Y	..	Yf	Y	Y	Y	Y	Y	Y	Y	Y	Y	.	Y
Ohio	Y	Y	Y	..	Y	Y	.	Y	Y	Y	Y	Y	Y	R	Y	Y
Oklahoma	Y	Y	R	..	Y	Y		Y	Y	Y	R	Y		Y	..	Y
Oregon	Y	Y	Y	..	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	.	Y
Pennsylvania	Y	Y	Y	.	..	Y		Y	Y	Y	Y	Y	..	R	.	Y
Rhode Island	Y	..	Y		..	Y	Y	Y	Y	R	Y	Y	Y	Y	.	Y
South Carolina	Y	Y		Y	Y	Y	.	.	Y	Y		Y	.	Y	Y	..
South Dakota	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	.	Y
Tennessee	Y	Y	Y	.	Y	Y	.	Y	Y	R	Y	Y	.	Y	.	Y
Texas	Y	Y	Y	.	..	.	Y		Y	Y	Y	.	Y	Y	.	Yg
Utah	Y	Y	Y	.	..	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y
Vermont	Y	Y	Y	.	Y	Y	..	Y	Y	Y	Y	Y	..	Y	..	Y
Virginia	Y	Y	R	..	.	Y	.	Y	Y	R	R	Y	..	Y	..	Y
Washington	Y	Y	Y	.	..	Y	..	Y	Y	Y	Y	Y	..	Y	.	Y
West Virginia	Y	Y	Y	..	Y	Y	.	.	Y	Y	Y	Y	..	Y	Y	Yh
Wisconsin	Y	R	Y	Y	Y	Y		Y	R	Y	Y	Y	.	Y		Y
Wyoming	Y	..	Y	.		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	.

Revised to November, 1926.

Y—Indicates such a tax is levied.
F—Firemen's pension tax.
R—Indicates tax is retaliatory.
a—Retaliatory law applies only to deposit requirements and fees for filing articles of incorporation.
b—County License fee also imposed.
c—School fund fee also collected.
d—Also excise tax of ¼ of 1% upon net value of policies on lives of Massachusetts residents
e—Reciprocal for companies of other states but fixed for those of foreign countries.
f—Domestic fire companies pay fire marshal tax, but no premium tax; other fire companies pay premium tax but no fire marshal tax.
g—Retaliatory law applies only to deposit requirements.
h—Retaliatory law applies only to fee for valuation of policies, and taxes, fees, etc., imposed on agents or brokers

NOTE.—This chart indicates merely the different types of special taxes, licenses and fees, and does not show exceptions. Thus the Connecticut premium tax, indicated by "Y" in that column, applies only to companies incorporated under foreign governments. Companies of other states pay a premium tax only under reciprocal provisions

State Insurance Funds: Optional and Monopolistic

By David McCahan

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THE growing extent to which insurance in its manifold forms has been utilized by the great masses of our population during recent years, together with the vast assets which, by the very nature of the business, have been accumulated by insurance companies, has resulted in considerable legislative attention being focused upon this institution. Laws have not always been confined to the supervision and regulation of private companies in order to safeguard the rights of the public, but in some cases have been designed to place the state in the position of an insurance carrier either in competition with private companies or to their exclusion. A variety of reasons has been advanced for this. The government life insurance plan was adopted as a war measure, teachers' and public employes' retirement systems have been devised to assist faithful workers in their endeavor to provide for old age, and bank guaranty laws represent an effort to protect the public from the hardships incident to bank failures. One motive which appears to have wielded considerable influence in the creation of some types of funds is a belief, especially on the part of those unversed in the knowledge of insurance underwriting, that the state can furnish insurance protection and all its collateral services at a lower cost.

Before proceeding to a more detailed analysis of the funds which have been established by various governmental agencies, it may be helpful to consider the amount of business transacted by them as a whole.

The premium income received in 1925[1] by the parcel post and registered mail insurance funds, soldiers' and sailors' life insurance fund, government employes' retirement fund and District of Columbia teachers' pension fund, all of which are operated by the Federal Government, totaled nearly $80,000,000. At least a like amount should be added for the state funds described in this article. As there are also numerous county and municipal insurance and pension plans in existence, an estimate of $200,000,000 as the amount received in the year 1925 by all governmentally operated insurance, pension and guaranty funds is doubtless conservative.

The following pages will be devoted to a brief review of the various funds created by different states which may properly be considered of an insurance nature. No attempt will be made to cover the Federal funds referred to above or the county and municipal insurance plans for protecting public property or providing pensions to teachers or public employes.

Time of Enactment

The states had done very little towards the creation of insurance funds prior to 1910, but the period 1911 to 1915 inclusive witnessed considerable activity along this line, which was maintained also during the succeeding five years. Since then fewer funds have come into existence and a number have been rendered inoperative by repeal of the law, exhaustion of the fund, or withdrawal of contributors. The trend in the establishment of insurance, pension and guaranty funds may be seen by referring to the subjoined table.

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[1] All figures used in this article are for the calendar year stated or fiscal period ending in that year, unless otherwise noted.

Dates of Adoption
(State Fund Laws)

	Workmen's Compensation	Teachers' Pension	State Employes' Pension	Hail	Bank Guaranty	Fire Ins. on State Property	Life	Public Deposit Guaranty	Bonding	Torrens Title	*Total*
Before 1905.... ..		1	..	..	.	2		.	..	6	9
1906–1910..... ..		1	..	.	4 [c]	..	1	.	..	2	8
1911–1915	13	10	1	1	2	3 [e]	1	..	1	3	35
1916–1920 .. .	3	4	1	4 [b]	2 [d]	4 [f]			1	7	26
1921–1925. ..	1	2	2	.		4 [g]	.	2	..	.	11
	17	18 [a]	4	5	8	13	2	2	2	18 [h]	89

[a] Maryland school pension fund not included.
[b] Oklahoma hail law repealed in 1925.
[c] Oklahoma bank guaranty law repealed in 1923.
[d] Washington Bank Guaranty fund now inoperative—all member banks have withdrawn.
[e] New Jersey fire fund not yet in operation—Michigan and Minnesota funds exhausted.
[f] Vermont fire fund not yet in operation—South Dakota's is an emergency reserve appropriation.
[g] Colorado, Iowa and Oregon's funds are established by appropriations to be used as emergency reserve.
[h] Many of these funds are inoperative.

Note.—Arizona, Nevada and Rhode Island have teachers' pension laws but since they are noncontributory and do not provide for the creation of a fund, they have been omitted from the tabulation. Connecticut and Maine have state employes' pension laws which have been excluded for the same reason.

Notwithstanding the fact that fewer funds were initiated between 1921 and 1925 than during either of the two preceding five-year periods, there was nevertheless a great amount of agitation for state insurance. Some idea of the extent of this as respects workmen's compensation may be obtained from information supplied by F. Robertson Jones, Secretary-Treasurer, Workmen's Compensation Publicity Bureau set forth in the footnote below.[2] The possibility of state funds in connection with proposed compulsory automobile liability insurance legislation has also received considerable attention, though it is difficult to understand how a state could write liability insurance since the very nature of that type of coverage would thus place a governing body in the position of defending one citizen against another.

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[2] Excerpt from letter of December 13, 1926. "During the years 1921–26, inclusive, bills to create monopolistic state workmen's compensation insurance funds have, according to our records, been introduced and subsequently defeated in the following states and territories:

Alaska—1921 and 1923
Arizona—1921
Connecticut—1921
District of Columbia—66th, 67th, 68th and 69th (bill pending) congresses
Florida—1921 and 1925
Georgia—1922
Illinois—1921 and 1925
Kansas—1921
Kentucky—1922
Maine—1921
Massachusetts—1922, 1923 (2 bills), 1924 (2 bills), 1925 and 1926 (2 bills)

TYPES OF FUNDS

The following analysis of the types of funds, the extent of their operations and the results achieved can of necessity touch only the high points because of limited space, but it is hoped it may serve to point out the tendencies and perhaps certain of the dangers incident to particular types of state insurance activities.

WORKMEN'S COMPENSATION

Under the workmen's compensation laws of most states, employers are obliged to guarantee the payment of certain prescribed benefits to workers injured in industry.

Monopolistic.—Nevada, North Dakota, Ohio, Oregon, Washington, West Virginia and Wyoming require all workmen's compensation insurance to be written with the state fund. In three of these self-insurance is permitted and in two others private employers may carry employer's liability insurance, as the law is elective. In the latter case common-law defences are removed, but in spite of that fact many employers in Oregon avail themselves of this privilege.

Competitive.—Arizona, California, Colorado, Idaho, Maryland, Michigan, Montana, Pennsylvania, New York and Utah have created funds with which the employer may carry his workmen's compensation risk if he so desires, although he is given the option of taking insurance with a private company or becoming a self-insurer upon meeting certain standards of solvency.

During the year 1920, when all state compensation insurance funds, other than Arizona,[3] were in actual operation, their combined premium income was 19.0 per cent of that written in the United States by the principal types of carriers (reciprocals and self-insurers being excluded since no data were available). For the year 1925 the ratio was 17.1 per cent. This change was in part due to a growth in the amount of business written by stock companies in states not having compensation funds and in part to a drop in the premium income of monopolistic funds not entirely offset by an increase in the competitive. The premiums received by each type of carrier during the years 1920 and 1925 will be found on following page.

While the state funds did not bulk so large in 1925 for the country as a whole, the proportion written by the competitive funds as compared with private companies in those states where both types of insurance were available remained substantially the same, although the relative proportion received by some individual funds decreased while that for others increased. Statistics for 1925 show the wide

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Minnesota—1921 and 1923
Missouri—1921, 1923, 1924 and 1926
Nebraska—1925
New Jersey—1921
Wisconsin—1923 and 1925

"During the same years, bills to create such monopolistic state funds where competitive state funds already existed were introduced and subsequently defeated in the various states as follows:

Idaho—1921
Maryland—1924
Montana—1921 and 1923
New York—1921, 1922, 1923 (2 bills), 1924, 1925 and 1926
Utah—1923

"Furthermore, in 1925 bills to create competitive state funds were introduced in Arizona and Illinois—the Arizona bill of that year being enacted and now in effect and the Illinois bill being defeated."

[3] The Arizona fund did not commence activities until March, 1926, so has developed relatively little experience.

variance in the extent of business transacted by the different competitive funds.

PREMIUM RECEIPTS—WORKMEN'S COMPENSATION INSURANCE

	1920		1925	
	Amount	Per cent of Total	Amount	Per cent of Total
Stock Companies*	$119,738,048	61.0	$137,120,735	64.7
Mutual Companies*	39,099,998	20.0	38,572,881	18.2
Monopolistic Funds	24,385,416	12.4	21,292,828	10.1
Competitive Funds	12,983,309	6.6	14,904,543	7.0
	$196,206,771	100.0	$211,890,987	100.0

*Data supplied by A. M. Best Company

COMPARISON OF PREMIUM INCOME FOR 1925 STATE FUNDS AND PRIVATE COMPANIES

	Premiums Received			Per cent of Total Received	
	State Funds	Private Carriers	Total	State Funds	Private Carriers
California	$ 5,811,317	$13,503,463	$19,314,780	30.1	69.9
Colorado	554,869	1,385,105	1,939,974	28.6	71.4
Idaho	278,610	468,016	746,626	37.3	62.7
Maryland	297,952	2,716,833	3,014,785	9.9	90.1
Michigan	520,918	7,519,570	8,040,488	6.5	93.5
Montana	253,055	176,173	429,228	59.0	41.0
New York	4,246,429	48,140,650	52,387,079	8.1	91.9
Pennsylvania	2,661,203	12,151,552	14,812,755	18.0	82.0
Utah	280,190	697,455	977,645	28.7	71.3
	$14,904,543	$86,758,817	$101,663,360	14.7	85.3

The California, Colorado, Idaho, Montana and Utah funds have a monopoly of insurance on public employments and contracts on public works. This accounts in part for the very much higher percentages they show.

One of the principal arguments advanced in support of state compensation funds is the lower cost of operation. Inasmuch as the scale of benefits to which injured workmen are entitled is specified by law, the cost of paying them should be the same regardless of the type of carrier. The only saving therefore would arise from a lower expense of operation. The ratio of administrative expenses to premiums written was 5.6 per cent for monopolistic funds in 1925 as compared with approximately 4 per cent for the same carriers in 1920. For competitive funds the ratio was 15.9 per cent in 1925 which is a very material increase over the 10.6 per cent ratio for 1920. These percentages are based upon actual expenditures and do not take into consideration the fact that monopolistic fund figures ordinarily include all expenses incident to the administration of the compensation law and neither set of figures includes allowance for office space, supplies, legal services, etc., furnished to the fund in many states without being charged against its expense account. Only California and Utah pay state premium taxes, the rate being 2.6 per cent in the former and 1.5 per cent in the latter jurisdiction. In order to make an accurate comparison of costs with private companies, an adjustment should be made for all these factors. If such were made, there is every reason to believe the average expense ratio for competitive state funds has so increased in late years as now substantially to approximate that for mutuals.

It would be misleading to present comparative expense ratios without some reference to the types of services performed by the different carriers. One of the most glaring deficiencies, from the standpoint of service, has been the entire lack of safety activities in the monopolistic funds until recent years and the disregard of such service by all except a few of the larger competitive funds. The Washington monopolistic fund is now carrying on a consistent program of accident prevention work and the Ohio fund has recently initiated similar activities under a constitutional amendment (1923) and enabling act (1925) which permit one per cent of the premium income received from employers to be used for this purpose. Aside from California, New York and Pennsylvania, little or no service of this nature is rendered by competitive funds. Some of the funds have no merit rating plans whatever while a number of others allow only an experience rate. As a whole it may safely be said that the maximum efforts are not being exerted to use merit rating as a means of reducing accidents, in spite of the emphasis being placed upon this by private companies.

One reason for the lack of service in many funds is the budgetary limit which is placed upon their expenditures. This restriction is reflected not alone in the curtailment of activities designed to prevent loss, which activities are fundamental to any well-rounded plan of insurance, but also in the inability of the management in some states to audit payrolls properly and thus be sure that each employer is paying his just premium. Managing officials of certain funds further contend the limitation on their expenses makes it impossible for them to secure and maintain high grade employes and to conduct necessary home-office operations as efficiently and pay claims as expeditiously as possible. Some likewise assert that this is a very material handicap in their efforts to secure business. Though legislators may be cognizant of the short-comings enumerated, little effort appears to have been exerted to remedy the situation.

TEACHERS' PENSIONS

Arizona, Nevada and Rhode Island have in force laws which grant pensions on retirement to teachers in public schools who have met certain requirements as to age and length of service. These are non-contributory. A number of states have never provided any pensions for school teachers, although they permit cities of a certain size within their boundaries to establish and operate local retirement systems. Nineteen,[4] however, have created funds having a state-wide application (in a number of cases, large cities in the state have their own funds and do not come under the state plan) to which teachers, the state and in some instances local school districts contribute. These may either be optional or compulsory. From the standpoint of financial stability they may be divided into two groups.

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[4] California, Connecticut, Illinois, Indiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Vermont, Virginia, Washington and Wisconsin.

Actuarial.—When this plan is followed teachers ordinarily contribute four or five per cent of their salaries, which sums are accumulated with interest in separate accounts for each member in the same manner as savings deposits. At time of retirement, the accumulated contributions, including interest, are used to purchase an annuity of such amount as they will buy according to a certain mortality table and a given rate of interest. Provision is generally made for withdrawal of savings in event of dismissal or resignation and for their payment to beneficiaries in case of death and to the member in event of disability.

The state usually offers to match the annuity provided by the teacher with a pension of like amount. Since teachers with records of service prior to the enactment of the law might only receive a very small retirement income under this plan if they have but a few years yet to teach, the state may grant an additional pension for the prior service. An annual appropriation is customarily allowed for establishing a reserve to meet current pension liabilities, but the accrued liabilities for prior service are so large that most states cannot afford to appropriate at one time an amount sufficient to take care of them, so the cost is spread over a number of years.

Cash Disbursements.—Teachers in a number of states make nominal contributions to the state retirement fund, such as $1 a month, which even with interest would be insufficient to provide much of an annuity at the end of their teaching service. No individual accounts are kept and the teacher has but a limited privilege of withdrawal, if any. The retirement salary is generally a fraction of the teacher's average salary for the five years preceding retirement, with minimum and maximum limitations. Pensions are paid from the teachers' contributions and public appropriations but the experience of states having such funds has been that the cost increases very rapidly and the accrued liabilities soon become enormous.

In the past decade, the income of contributory state teachers' pension funds has grown tremendously until in 1925 the aggregate exceeded $31,500,000. The size of some of these funds is evidence not alone of the important rôle which they play in the economic affairs of teachers, but should be a warning to state officials of the necessity for making certain at once that they are on a safe financial basis. The tendency unquestionably lies in that direction and the more recent laws are on the whole sound in principle. Furthermore, a number of states, as Indiana, New Jersey, New York and Wisconsin, have in late years materially revised their former laws in order to place them upon a firmer foundation.

Other states have either failed to recognize the condition of their funds or legislatures have done nothing to remedy it. Officials of four frankly admit their funds are actuarially unsound or in a very weak position. In the case of California, for example, on November 30, 1924, the present value of annuities already entered upon was $4,246,950 and of probable annuities to be granted teachers then in actual service $46,211,940. As against these total liabilities amounting to $50,458,890, the assets on hand plus the present value of all probable future income, including that from the inheritance tax as well as teachers' contributions, amounted to $17,610,437. On this basis, the deficit as of that date was $32,848,453. It is estimated the Minnesota fund has now about $1,000,000 of assets and $10,000,000 of liabilities. If the experience of these funds does nothing else, it should at least emphasize the importance of making a careful study and employing a competent actuary before enacting a law, in order that there may be no question later as to the ability of the fund to pay pensions on which aged teachers are relying for support during their declining years.

STATE EMPLOYES' PENSIONS

Although Connecticut and Maine pay straight pensions to retired state employes, only four states, so far as the writer has been able to ascertain—Massachusetts, New Jersey, New York and Pennsylvania—have contributory systems. All of these maintain individual accounts for each member's contributions. Annual appropriations are made in the last three states to meet accrued and accruing liabilities, but Massachusetts pays its portion of the pension costs only when incurred. Provisions as to withdrawal, death, disability and for taking care of service prior to the enactment of the law resemble very closely those discussed for teachers' pensions. With the exception of the Massachusetts fund, all others are of comparatively late origin. Their authors have apparently profited by the mistakes made in many of the teachers' funds, although it may be noted that New York still has a separate retirement system for state hospital employes, which system is in bad financial condition. Efforts are being made to bring this under the general state employes' retirement system. Receipts from employes' contributions and state appropriations of the Massachusetts, New Jersey and New York funds during the year 1925 were $4,616,538.

HAIL

Among those states whose crops are particularly susceptible to damage by hail, five—Montana, Nebraska, North Dakota, Oklahoma and South Dakota—have created funds to supply protection against this hazard. The Oklahoma law has subsequently been repealed. Present funds are of two types.

Automatic.—All cropped land is automatically covered in North and South Dakota unless specifically exempted. A hail indemnity tax is assessed against the owner or tenant in the same manner as other taxes. North Dakota also levies for the benefit of its hail fund a one cent flat acreage tax on all tillable land whether or not insured by the state.

Optional.—In two states farmers may obtain coverage against hail by applying to the county assessor. When thus covered in Montana, the hail levy is included with other taxes against the land and collected in the same manner. Nebraska requires the premium for hail insurance to be paid in cash or by bank order.

State hail insurance funds did not write any substantial amount of business until 1919. During that year, however, their income from assessments and levies represented 19.4 per cent of all premiums received by hail insurance carriers operating in this country. An idea of the changes which have subsequently come about in their relative importance as compared with private companies may best be obtained from the following table:

PREMIUM RECEIPTS—HAIL INSURANCE
(in thousands)

Years	Stock and Mutual Companies*	State Funds	Total	State Fund Per cent of Total
1919	24,235	5,861	30,096	19.4
1920	19,588	5,864	25,452	23.2
1921	15,646	7,306	22,952	31.8
1922	12,693	6,256	18,949	33.0
1923	13,812	5,464	19,276	28.3
1924	10,411	4,471	14,882	30.0
1925	16,404	2,688	19,092	14.1

* Data supplied by National Underwriter

The automatic funds of North and South Dakota received more than ninety per cent of the total levies and assessments paid to all state hail funds during the above seven years. While their annual income has suffered a very material reduction, particularly in 1925, that of the optional funds has dwindled much more rapidly. The maximum receipts of all optional funds combined exceeded $900,000 in 1920, but were barely more than $100,000 in 1925.

Although the cost per acre has generally been lower than that charged by private companies, the variance in the levy from year to year when the rate is not fixed in advance, the possibility of extra assessments, the unscientific zoning and rating systems used until recently by certain funds, the occasional pro-rating of losses and frequent delays in their payment, and the lack of adequate catastrophe reserves and re-insurance have unquestionably created dissatisfaction with state administration of this type of coverage. All reduction in premium income cannot be attributed to these factors alone perhaps, since the general deflation of farm values and a more widespread knowledge by farmers of the manner in which they can exempt themselves from the operation of automatic laws have undoubtedly exerted an influence. In 1925, North Dakota adopted a zoning system and South Dakota revised the one in operation there. An effort is now being made in Montana to incorporate the automatic feature in its legislation.

BANK GUARANTY

The purpose of these funds is to protect depositors in state banks against loss which might be occasioned by the bank's insolvency.

Compulsory.—Mississippi, Nebraska, North Dakota, Oklahoma and South Dakota have made the protection of deposits in this manner compulsory, though the law in Oklahoma has since been repealed. Texas banks must either be protected under the guaranty system or file a bond for the security of deposits.

The maximum rate of assessment was set at one fourth of one per cent of the average daily deposits in Mississippi, North Dakota and South Dakota, and one fifth of one per cent in Oklahoma. The limits in Nebraska and Texas, however, were higher since Nebraska allowed an extra assessment of one half of one per cent (one per cent until 1923) in addition to its regular one tenth of one per cent regular assessment. In Texas, the regular assessment was placed at one fourth of one per cent and the maximum at two per cent.

Since the assessment privilege was so limited in the first four states named and adequate provision had not been made beforehand for unusual losses, these funds found themselves unable to weather the storm of the deflation period. As a result, Oklahoma was obliged to repeal its law at a time when it had $1,336,000 of Banking Board Warrants outstanding and owed depositors of insolvent banks about $6,000,000. The latter amount has since been reduced by the liquidation of these banks, but the state bank commissioner thinks "it is not likely now that any of the Banking Board Warrants or any of the (remaining) amount due to depositors under the provisions of that law will ever be paid." The Mississippi, North Dakota and South Dakota funds now have outstanding liabilities approximating $43,000,000 with assets of about $640,000 and a possible annual income of $680,000.

It is contended the Nebraska fund is the only one which has achieved success, but opponents claim it would be insolvent if obliged to pay losses on the thirty-seven banks now being operated by the Commission. Even assuming that body is able to put most of these banks back on their feet without loss, it is evident it would not have been able to meet all liabilities except for the special assessment privilege. The payment of the heavy maximum assessments in Texas has been a very severe drain upon the bankers of that state as a result of which state banks are rapidly leaving the guaranty fund and availing themselves of the bond security plan made possible under an act of 1925. An attempt by the South Dakota legislature in 1925 to repeal its guaranty law was repudiated by the voters at a referendum in November, 1926, by being made a political issue.

Optional.—Membership is optional in Kansas, but under a recent state supreme court decision certain penalties are attached to withdrawing from the fund when all liabilities to depositors of failed banks have not been met by the fund. On August 20, 1925, it was estimated that $4,500,000 in guaranty fund certificates were outstanding with less than $18,000 in the fund to meet them. The approximate amount which can be realized from assessments each year is about $350,000. Washington likewise has an optional system but all member banks have exercised their right to withdraw from it.

INSURANCE ON STATE PROPERTY

Provision for payment of losses on state property occasioned by fire, tornado, and in certain cases other hazards, has been made in some states by the creation of funds. These are of two types.

Emergency Reserve Appropriation.—A given amount may be appropriated which shall be used for replacing destroyed property. This may be an outright annual appropriation designed to build up in course of time a fund of substantial size but without any particular reference to the value of the property at risk. In Oregon, for example, $25,000 was to be set aside on July 1, 1925 and July 1, 1926, and thereafter the sum of $50,000 on July first of each year until $300,000 shall have been accumulated. The first payment under this provision was immediately wiped out by a $25,700 loss at the Oregon Agricultural College. Colorado provides for an annual appropriation of $40,000 beginning with the fiscal year 1926 and limits the total that may be accumulated in the fund to $250,000.

On the other hand, the appropriation may be intended to pay only for losses which take place during the period for which appropriations are budgeted.

Any amount not used reverts and a separate appropriation must again be made by the following legislature. Iowa sets aside $100,000 every biennium and South Dakota $150,000 annually under such laws. For the ten-year period ending June 30, 1924, the biennial losses in Iowa ranged between $3,365 and $267,561. The lowest annual loss in South Dakota since the enactment of the law in 1919 was $317 and the highest $39,346. New Jersey and Vermont are making annual appropriations for the purpose of establishing substantial reserve funds, but in the meantime are covering their property with private companies.

Funds established in the manner described may not strictly be regarded as affording insurance protection. Their purpose is to permit the restoration or replacement of destroyed property without the necessity of waiting for another session of the legislature rather than to distribute the loss in accordance with recognized insurance principles.

Self-Insurance.—Alabama, Florida, Michigan, Minnesota, North Dakota, South Carolina and Wisconsin have created self-insurance funds which charge definite premiums, usually based on old-line company rates, set up reserves and in general function as regular insurance carriers. Re-insurance is frequently carried on large or extra-hazardous risks. The Michigan and Minnesota funds have become exhausted within recent years owing to failure the part of the state to appropriate premiums. The premium income of the other five totaled $869,559 in 1925. Because these funds are limited to coverage on public property—that belonging to the state and in some cases counties, municipalities and school districts—there seems to be small prospect of much growth.

LIFE

Savings banks in Massachusetts may organize insurance departments under certain regulations. These departments are not only closely supervised by the state but are furnished with all necessary supplies, as well as the services of an actuary, a state medical director and instructors who explain the system to employes in industry and write insurance. The state further exercises general administrative control. While there is no legal liability on the part of the state and no fund other than a general insurance guaranty fund which is in the nature of a catastrophe reserve, this system is so closely allied with the state as to be frequently regarded in the nature of state insurance.

Although the banks are enabled to offer standard contracts at a lower net cost than old-line companies, since the state bears a portion of their expenses and they pay no commissions to agents, the aggregate premium received by them in 1925 was only one per cent of the total collected by all types of life insurance carriers in the state. The missionary work performed by agents of old-line companies has probably been responsible in good measure for the amount of growth attained. Because life insurance is "sold and not bought" a very marked progress in the savings bank system is hardly probable.

Wisconsin operates a fund of small size which issues standard forms of life insurance policies. Fewer than 900 contracts are in force and the premium income is but a negligible fraction of that received by private companies in the state. No serious effort is being exerted to secure new business.

PUBLIC DEPOSIT GUARANTY

All interest collected by the state of Iowa or its political subdivisions on public funds may be diverted and used for the purpose of paying losses on public funds resulting from the failure of banks in which they were deposited. On August 1, 1926 (the end of the first year's operations), this fund had liabilities on approved unpaid claims totaling $700,000 beside a large amount of undetermined liabilities. All income available by the terms of the law had been used to pay losses, so there were no assets. In Wisconsin a special fund is being set up, under a recent law, consisting of one half of one per cent of the principal of public deposits. This will take the place of the former requirement as to the furnishing of depository bonds and is intended to pay for losses on public funds in closed banks. No information is available as to its operations.

BONDING

All bonds required in North Dakota or South Dakota to be filed by officers of the state or its political subdivisions are written by state funds created for that purpose. These laws are automatic in character and prohibit the use of public monies to pay for personal or corporate surety bonds. The funds are small in size and limited in their possible development because they cover only public employes. The combined premium income in 1924 was approximately $45,000.

TORRENS TITLE

In connection with the operation of the Torrens title registration laws, insurance or indemnity funds have been provided for in eighteen states. One writer[5] claims, "as an insurance scheme, the Torrens laws are to say the least, extremely undeveloped and open to many objections." Many of the funds are now practically inoperative.

CONCLUSION

The record of state insurance as a whole has not been inspiring. Some funds have been exceptionally well managed and point with pride to their achievements. Others have hopelessly failed. The downfall of the latter may be attributed to a narrowly restricted field of operation or a sacrifice from the outset of basic underwriting principles in the interest of lower cost. In many cases, due regard has not been paid to the proper distribution of risk, the collection of adequate premiums, the reinsurance of excess lines and the creation of reserves for unusual losses. Loss prevention activities, which progressive underwriters recognize as essential to any constructive insurance plan, and other collateral services have been neglected or materially limited. If all funds are grouped together, the question may well be raised as to whether the savings claimed for them have warranted the foregoing of benefits from these other factors. The tendency in recent years to adopt practices which old-line companies have proved by long experience to be sound is encouraging, but improvements in service and security can be brought about only by increasing the expenses of operation. This would tend, however, to minimize the importance of the reason advanced for the existence of certain funds and recognition of its effect should serve to make legislators hesitate before engaging the state in a type of business which private companies have already demonstrated their ability to handle.

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[5] *The State Insurance of Land Titles in the United States,* Dr. E. L. McKenna.

Insurance Instruction in American Universities and Colleges

By S. S. Huebner, Ph.D.

Professor of Insurance and Commerce, Wharton School of Finance and Commerce, University of Pennsylvania

ONE of the most impressive developments connected with insurance, particularly during the last ten years, is the rapid recognition of the subject by our higher institutions of learning as an integral part of their curriculum. This tendency is fully justified by every educational consideration—the vital social importance of the subject, promotion of the individual's economic welfare, magnitude of the business, general educational bearing upon other economic subjects, and mental disciplinary and utility value to the student.

Insurance has become a business of tremendous proportions in the United States, with an annual premium income of about six billion dollars, and with assets equal to about one dollar out of every twenty-five dollars of the nation's total wealth. It is concerned with the elimination of risk from our economic affairs, and constitutes one of the fundamental divisions of economics, just like production, distribution and consumption. The fundamental purpose of insurance is to protect against—and where a loss has occurred to indemnify—the loss of life and property values. With respect to both types of values, insurance also comprises the vast field of loss prevention in the first instance.

Life insurance capitalizes human life values, by far the greatest economic value in every community, in the interest of family, business and society. It deals with the financial appraisal, organization, management and liquidation of the monetary worth of human life values, and represents the application to such values of the same fundamental economic principles as are now so generally taught in our institutions of learning and so commonly practiced as a matter of course with respect to property values. It also bears a vital relation to thrift and investment, to the creation of sinking-funds to meet future family and business obligations dependent upon the continuance of life, to the creation, protection and settlement of estates, and to educational and philanthropic bequests. Property insurance, on the contrary, protects against the loss of property values through the many types of hazards that exist, and serves to investigate the nature and significance of the causes of loss, to formulate ways for their elimination, and to distribute the "risk bearing" equitably and conveniently among individuals, types of business, and communities. Moreover, all forms of insurance serve as a basis of credit and as a means of eliminating, in business affairs, the paralyzing effects of worry and fear. All economic enterprises—family, business, or vocational—involving property values, human life values in the form of current earning capacity, or skilled managers or employes, are obliged at all times, if proper organization is wanted and credit desired, to use practically all the leading lines of insurance.

Magnitude and vital bearing upon social and individual welfare, however, are not the only considerations that should prompt incorporation of the subject of insurance into our educational system. Insurance also bears a direct and vital relation to other applied economic subjects that have long enjoyed a prominent place in the curriculum of the business schools of our universities and colleges, such as corporation finance, investments, industrial organization and management, commercial credit, wills and trusts, and taxation. All of these subjects are intimately concerned with life insurance, and most of them also with property insurance, and specialization in the study of these applied subjects involves a knowledge of the services, principles and practices of insurance just as truly as it does of the other basic subjects now so generally required as a preliminary to specialization in any of the applied business fields. Moreover, as a collegiate subject of study, insurance combines the virtues of mental discipline, a proper sense of the seriousness of life, a proper concept of community service, and information really useful in living, quite as much as other subjects now comprising the collegiate curriculum, and in many instances much more so.

Rapidity of the Development

In 1925, Professor Ralph H. Blanchard, of Columbia University, made a canvass of 210 American higher institutions of learning with a view to determining the number that were offering courses of instruction in insurance. His summary showed that ninety-three institutions offered such courses at the time of his inquiry. Of this number, fifty institutions offered only one general course that related to the several leading lines of insurance, thirty-two offered specialized courses only, and eleven both general and special.

For the preparation of this article, the author sent a detailed questionnaire to the ninety-three institutions mentioned by Professor Blanchard, as well as to others that were subsequently reported as having started instruction in insurance. Seventy-seven institutions have made returns thus far, and this number, it should be noted, embraces nearly all the leading universities and colleges of the country. Sixty-four, or all but thirteen of the institutions that responded, were able to report the year when organized instruction in insurance was first offered. The very beginning, aside from the presentation of the subject along strictly legal or actuarial lines, seems to date back to the academic years 1903–04 and 1904–05 when eight institutions commenced giving instruction in insurance in some form. Following this beginning, very little progress seems to have been made for the next ten years, only one other institution having been added prior to 1910 (namely, in 1906) and only six more before 1915, namely, two in 1911, three in 1912, and one in 1914. Beginning with 1915, however, the adoption of courses proceeded at a much more rapid pace. In that year, five more institutions were added to the total, and then followed 1916 with four more, 1918 with two, 1919 with seven, 1920 with nine, 1921 with five, 1922 and 1923 with three each, 1924 with six, 1925 with three and 1926 with two. Instruction in insurance along economic and operating lines may thus be said, as far as American universities and colleges are concerned, to have had its beginnings less than a quarter of a century ago, and to have experienced its main growth within the last decade. Its recentness is indicated by the fact that thirty-one of the sixty-four institutions reporting, or nearly one-half, commenced their insurance instruction in 1920 or thereafter; that thirty-eight, or nearly sixty per cent, started after 1918; forty-nine, or three-fourths of the total, after 1915; and fifty-five, or eighty-six per cent of the total, following 1910.

IMPROVEMENT IN COURSES OF STUDY

The rapid adoption of insurance courses has been accompanied by a marked expansion in the comprehensiveness of the instruction given. Here again, it should be noted that the seventy-seven institutions that replied to the detailed questionnaire embrace nearly all universities and colleges that conduct schools or departments of business and that are thus most likely to have given thought to the inclusion of insurance into their course of study. The present study is therefore believed to be sufficiently comprehensive and representative to give a fair composite picture of the existing situation.

Although eight institutions offered instruction in insurance as early as 1903–05, that instruction was very general in character, and with but one or two exceptions did not relate to all the important types of insurance coverage. In most instances the subject was not even presented in a separate course, but was given in conjunction with some other subject like economics, finance or banking, and usually by teachers whose interest and training lay primarily in those other subjects and who added insurance largely from an experimental standpoint. Moreover, in the absence of adequate texts the instruction was largely in the nature of lectures on a selected series of subjects instead of a comprehensive and well-correlated course of study. Between 1911 and 1915, however, fairly comprehensive text-books on life and property insurance first made their appearance, and from that time on the introduction of separate and well-rounded courses in these two major types of underwriting became easier and much more convenient.

The extent to which separate courses are now given is clearly indicated by the returns of the seventy-seven institutions to the aforementioned questionnaire. Seventy-one report that the subject of insurance is offered in the form of a separate course, or courses. In only six instances is the material offered in conjunction with some other subject, five reporting that the work, although definitely arranged, is given in connection with their courses in economics, and one stating that the work is limited to life insurance only and is being presented in two courses on the "Mathematics of Finance" and the "Mathematics of Life Insurance." All except four of the seventy-one institutions that give separate courses report that the instruction covers the three major types of underwriting, namely, life, property and casualty insurance. Of the four exceptions, three institutions give a separate course in life insurance only, and one confines itself to casualty insurance. Where only one course is given, and this is the case with one-half of all the institutions reporting, the emphasis is usually half on life insurance and half on property and casualty insurance, with the principal emphasis on the property insurance. Moreover, in most instances the course extends over one semester, with an average of three class sessions per week.

Thirty-nine, or fifty-six per cent of the institutions reporting separate insurance courses, have seen fit to specialize with separate courses in each of at least two of the three major types of underwriting, thus marking another distinct advance. A number of other institutions indicate their intention to do the same in the near future. All of the thiry-nine institutions except one give separate courses in life insurance;

thirty-five, or all except four, separate courses in property insurance; nine give separate courses in casualty insurance; and eight, courses in actuarial science. In about three-fourths of the instances the course extends over one semester with two class sessions per week in about half of the cases, and from three to five class sessions in the remaining half. In about one-fourth of the institutions, the special courses extend throughout the academic year, *i.e.* to the extent of at least two semesters. In about half of these instances, these institutions, usually ranking among the leading universities of the country, have seen fit to offer an additional course in each of the fields of life and property insurance for those who have completed the introductory work pertaining to these subjects.

Another matter of great importance educationally should be noted, namely, the extent to which instruction in insurance is required as an integral part of a business education. Nine universities and colleges, including Chicago University, Penn State College, the University of Pennsylvania, the University of Missouri, and Grinnell College, require a course in the principles of insurance to be taken by their students in business. Syracuse University reports that, while the step has not yet been taken, it is the intention to require such a course of all students in business administration in the near future. Howard University and the universities of Kansas and Montana report that, while the course is not absolutely mandatory, it is strongly recommended to all their students in business administration. Four universities, namely, Syracuse and Miami universities and the universities of Kansas and Oregon, report that a course in insurance is required of all students majoring in financial subjects.

FUTURE DEVELOPMENTS

Despite the phenomenal growth of education in insurance during the last ten years, and particularly during the last five or six years, much still remains to be accomplished. The tendencies are started it is true, but the real momentum, for the greatest social good, remains to be developed. From this standpoint, the following four developments, aside from the introduction of the subject into more institutions of learning, would seem to be most urgent:

(1) The further extension of the idea that a course in insurance, to the extent of at least one semester, be required of or strongly recommended to all students seeking a business education. It should also be strongly recommended to students in sociology and in education, particularly along the line of life insurance. A course in insurance is just as fundamental to personal and social well-being as most of the other basic courses now required in our schools of business. The subject reaches into the future life of every graduate who leaves a school of business, and it reaches vitally. Life insurance is a universal service along many lines required by every family and business head, be he poor or rich. Every person whose life has a value needs life insurance. Likewise, every possessor of property values needs the service of property insurance to improve his credit, to safeguard himself against unnecessary loss, and to free his mind from the inefficiency inevitably connected with the worry and fear associated with uncertainty in human economic endeavors. The suggestion is further justified when it is remembered that the subject of insurance has a general and vital bearing upon other economic subjects in the collegiate curriculum, and that it also lends

itself admirably to the development of the reasoning power of the student, and to the inculcation of the concept of service to family and community.

(2) Greater emphasis, in the general course for all students, upon the economic services of insurance as contrasted with over-emphasis of the mathematical principles and operating practices. The latter may well be left for detailed treatment in the more specialized courses intended for those who are looking forward to the adoption of insurance as a career. There should be just enough of the technical aspects in the general course to make the reserve system in insurance clearly understood and to cover the essential terms of the contract. In ever so many instances, owing to the natural proclivity of the instructor, the highly technical aspects of the business, and particularly the mathematical, are made to overshadow the vital service phases of insurance concerning which students of business and the public generally should be informed to have a clear understanding of the far-reaching and manifold usefulness of insurance to the family, to business; and to the insured's personal welfare. In life insurance the emphasis should be primarily upon the ideas of life value appraisal, capitalization of that value, indemnity against the loss of current earning power, depreciation of the life value through disability or old age, the use of sinking-funds, the establishment and maintenance of credit, the accumulation of emergency funds, the creation of a personal estate through sound investment, the conservation of the human life value through periodic medical examinations, and the use of life income plans and other trust arrangements. In the field of property insurance the emphasis should likewise be on the services rendered to business by way of indemnity for loss, the creation and improvement of credit, the prevention of loss in the first instance, and such other services as will be of real usefulness to the layman in his later daily life. Irrespective of the type of insurance under consideration, attention should also be given to the various forms of coverages available and their respective advantages and disadvantages under varying circumstances, and to the various types of contracts in use and the meaning of their provisions and the significance of their purpose.

(3) The development of a specialized literature intended to bring insurance, and particularly life insurance, into proper relation with the numerous applied economic subjects upon which it has so vital a bearing. Thus in life insurance there should be prepared a series of books, each treating of life insurance in its specific relationship to some one of the important departmental divisions of economic and social science, *i.e.* one on the economics of life insurance; another on the relations of life insurance to saving, investment and credit; another on its relations to wills, trusts and the settlement of estates; another on the relations of life insurance to taxation; another on the sociological aspects of life insurance; and another on its relations to the financing of education and philanthropy. Similarly, in the field of property insurance a specialized literature is needed, in the form of separate volumes, to explain the relations of that branch of insurance to credit, to the prevention of loss in the first instance, and to the protection of profits and unavoidable overhead and fixed charges in the event of business interruption.

Such a specialized literature, now greatly wanting, will offer a threefold advantage. In the first place it will tend to bring the subject of insurance increasingly to the thousands upon thousands of graduates who leave our schools of economics and business annually to go back to their respective communities to be leaders as teachers, editors, lawyers, bankers, salesmen, business men, etc. Business education in our universities and colleges is customarily organized on the basis of departments or groups of studies and students select the same for their specialty. As already stated, the great majority of insurance courses are elective, and students in other departments therefore often have little opportunity to get into contact with the subject of insurance. Or if the opportunity exists, they receive little or no guidance from their advisors who are usually unacquainted with the subject themselves, largely because text books in the several fields of applied economic science were written by authors unacquainted with the far-reaching economic services of insurance. The pitiable result therefore is that as yet the great majority of students pass through our collegiate business schools without ever being introduced to the subject of insurance, except possibly in a very perfunctory manner.

With a specialized insurance literature, directly related to the aforementioned departmental subjects, it seems reasonable that both teachers and students in the given specialty will have occasion to use the same and thus have their vision of insurance enlarged. In time the services of insurance will also be reflected in the text-books that relate to economics, corporation finance, commercial credit, investments, taxation, sociology, etc. Our text-books are written mainly by those who graduate from institutions of higher learning, and when they become familiar with life and property insurance as related to their particular field—be it economics, finance, credit, taxation, sociology or education—we may rest assured that future text-books will have insurance incorporated within their pages to a much greater extent than is now the case. Moreover, such a specialized literature will serve greatly to develop an adequate number of teachers of insurance. That is one of our greatest problems—the dearth of competent teachers to take charge of the numerous insurance courses that are being started. In fact, many universities and colleges refrained from installing a course for years, and some offer this as the reason for the absence of the subject today, because they had no one available as teacher. That has also been the story with respect to the introduction of other applied business courses, and can only be overcome in the course of time. Insurance being one of the latest arrivals among business subjects in universities and colleges, the problem seems more acute than in most other subjects. But it is not essentially different in nature, since its companion subjects were obliged to face the same problem in their day. The solution is clear: Teachers of insurance can be derived in sufficient numbers only from the great body of our college graduates who have had the benefit of insurance instruction somewhere in their four years of collegiate study.

(4) The extension of instruction in the economics of insurance to the high schools. This is very important from the social and personal utility standpoints, because probably not more than one high school graduate out of ten ever enters college, and probably not more than one out of every thirty or forty enters a collegiate school of business. Insurance is fully as worthy of being introduced into the school system below collegiate grade as are most of the other commercial and financial subjects that now

find a place in the high school curriculum. But that will never happen on any large and permanent scale unless it comes from the top down. All great educational ideas percolate downward from the top, and as a general proposition it is the higher institution of learning that is the original sponsor. And from there, through the development of teachers and text-book equipment, the subject gradually finds its way down, layer by layer, until the masses receive the benefit of the instruction that they ought to have. What an incentive, therefore, to effect an adequate and permanent establishment of insurance education in our higher institutions of learning.

Report of the Board of Directors of the American Academy of Political and Social Science for the Year Ending December 31, 1926

I. REVIEW OF THE ACADEMY'S ACTIVITIES

WITH each year, the Academy demonstrates more fully the statesmanlike vision of the founder of the Academy, Edmund J. James, in establishing a national organization, free from all partisan affiliations to devote itself exclusively to the study and discussion of the great economic, social and political problems confronting the country. The membership of the Academy, distributed throughout the country, is made up of men and women who, in their respective communities, wield a real influence in the formation of an enlightened public opinion. The calendar year, which has just come to a close, has witnessed a gratifying strengthening of the Academy's influence through the meetings that have been held, and especially the splendid series of volumes, published under the Academy's direction.

The Annual Meeting, held in May last, was devoted to "The United States in Relation to the European Situation." It has now become the established practice of the Academy to devote the six sessions of the Annual Meeting to a discussion of some aspect of the international situation with special reference to the foreign policy of the United States. In a very real sense, the Annual Meeting has now assumed the character of a national conference, and with each year a larger number of the Academy members from remote sections attend these sessions. Furthermore, delegates are appointed by Governors of States, and by the national commercial and civic organizations, which adds greatly to the influence of the Annual Meeting. This influence is further strengthened by the publication of the proceedings in a special volume.

II. MEETINGS

In addition to the Annual Meeting the Academy held the following conferences:

February 20, 1926: Modern Crime—Its Prevention and Punishment (three sessions).
- Saturday morning. Modern Tendencies in Crime.
- Saturday afternoon. Some Factors in the Prevention and Punishment of Crime.
- Saturday evening. The Detection and Prevention of Modern Crime.

October 29 and 30, 1926: Federal Versus State Jurisdiction in American Life (six sessions).
- Friday morning. Federal and State Sources of Revenue.
- Friday afternoon. Child Labor and the Federal Government.
- Friday evening. Some Phases of State and Federal Control.
- Saturday morning. Extension of Federal Influence in Education.
- Saturday afternoon. Power Development and Its Supervision.
- Saturday evening. Corporation Control by the Federal Government.

The complete proceedings of these conferences have been published in special volumes.

In addition to these national conferences the Academy held the following special session: December 17th—The Future of International Economic Relations.

Important as our meetings are, it must be said that the major influence of the Academy is exerted through its publications. Every member of the Academy is under a debt of obligation to the Chairman of the Editorial Council, Dr. Clyde L. King, upon whom the major responsibility for the publications of the Academy falls. We are likewise deeply indebted to the editors of special volumes, whose co-operation has been secured by Dr. King, resulting in the excellent volumes published during the year, the titles of which are set forth in the section of publications.

Members of the Academy will recall that there has been established what is known as the Simon Nelson Patten Fellowship Fund in honor of the late Professor Simon Nelson Patten, who for so many years was a distinguished member of the Board of Directors. During the year just closed the Academy appointed Dr. Wilbur C. Plummer, of the Department of Economics of the University of Pennsylvania, as a special Research Fellow under this fund. Dr. Plummer has prepared and presented a report on "The Social and Economic Consequences of Buying on the Instalment Plan." This valuable study of one of the most important of our current problems appears as a supplement to the January issue of *The Annals*, and has by this time doubtless been received by all the members. It is a valuable contribution to current economic literature. Other Special Fellows will be appointed from time to time.

III. PUBLICATIONS

During the Year 1926 the Academy published the following special volumes:

Industrial Safety (January)
Legal Aid Work (March).
Modern Crime—Its Prevention and Punishment (May).
The United States in Relation to the European Situation (July).
Markets of the United States (September).
Thirty-Fifth Anniversary Index (September Supplement).
The Motion Picture in Its Social and Economic Aspects (November).

IV. MEMBERSHIP

During the year 1926 the Academy received 1259 new members and 141 new subscriptions, or a total of 1400. The Academy lost 85 members by death, 642 by resignation and 197 delinquent members were dropped. There were 91 subscriptions taken from the roll—66 by resignation and 25 delinquents dropped. The present membership of the Academy is 7912 members and 1693 subscriptions, making a total of 9605.

V. FINANCIAL CONDITION

The receipts and expenditures of the Academy for the fiscal year just ended are clearly set forth in the Treasurer's report. The accounts were submitted to E. P. Moxey Company for audit, and a copy of their statement is appended herewith. In order to lighten the expenses incident to the Annual Meeting and other Conferences held during the year, special funds were raised amounting to $4316. The Board desires to take this opportunity to express its gratitude to the contributors to these funds.

VI. CONCLUSION

Your Board desires again to avail itself of this Annual Business Meeting to emphasize the desirability of establishing permanent headquarters in the form of an Academy Building, and of securing an Endowment Fund which will enable the Academy to establish research fellowships and otherwise promote the investigation of economic, social and political problems. Owing to the increasing demand for space in the buildings of the University of Pennsylvania, the University authorities have found it necessary to request the Academy to vacate the quarters, the use of which the Academy has enjoyed until the close of the present year. We have rented 3622–24 Locust Street, Philadelphia, but your Board will not feel satisfied until the Academy is in possession of its own building for the administrative offices and for the holding of Academy sessions.

In conclusion, your Board desires to impress every member of the Academy that we are a great national co-operative organization, the success of whose work depends upon the active interest and support of our members. We therefore earnestly hope during the year 1927 to have the benefit of the active interest and support of every member of the Academy.

EDWARD P. MOXEY & CO.
Real Estate Trust Building, Philadelphia

January 11, 1927.

CHARLES J. RHOADS, ESQ., *Treasurer*,
American Academy of Political and Social Science Philadelphia, Penn.

Dear Sir:

We herewith report that we have audited the books and accounts of the American

Academy of Political and Social Science for its fiscal year ended December 31, 1923.

We have prepared and submit herewith Statement of Receipts and Disbursements during the above indicated period, together with Statement of Assets as at December 31, 1926.

The Receipts from all sources were verified by a comparison of the entries for same appearing in the Treasurer's Cash Book with the record of Bank Deposits and were found to be in accord therewith.

The Disbursements, as shown by the Cash Book, were supported by the proper vouchers in the form of cancelled paid checks or receipts for moneys expended. These were examined by us and confirmed the correctness of the payments made.

The Investment Securities listed in the Statement of Assets were examined by us and were found to be correct and in accord with the books.

We have also prepared and submit herewith Statement showing the financial condition of the S. N. Patten Memorial Fund and the Edmund J. James Memorial Fund as of December 31, 1926, as well as the Income derived from these fund Investments.

As the result of our audit and examination we certify that the statements submitted herewith are true and correct.

Yours respectfully,

(Signed) EDWARD P. MOXEY & Co.,
Certified Public Accountants.

AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE

STATEMENT OF RECEIPTS AND DISBURSEMENTS FOR FISCAL YEAR ENDED DECEMBER 31, 1926

Cash Balance January 1, 1926			$12,070 39
Receipts			
Members' Dues		$35,784 79	
Life Membership		200 00	
Special Donations		4,316.00	
Subscriptions:			
Individuals	$287 75		
Libraries	2,219 25		
Agents	6,232.54		
		8,739.54	
Sales		4,497.35	
Interest on Investments and Bank Deposits		7,325 77	
Endowment Fund Contributions		135 00	
Investments Sold		58,868 13	
Advertising		103.50	119,970 08
			$132,040.47
Disbursements			
Office Expense		$4,299.61	
Philadelphia Meetings		7,925.76	
Publicity Expense		6,427.25	
Publication of *The Annals*		24,796.54	
Membership Records		4,532.23	
Sale of *The Annals*		761.37	
Investments		71,951.89	
Discounts and Collections		8 29	120,702.94
Cash Balance December 31, 1926			$11,337.53

Assets

Investments (Book Value)		$143,680.78
Cash:		
In Academy Office	$400.00	
In Treasurer's hands, Girard Trust Company	10,693.78	11,093.78
Balance due from Patten Memorial Fund		243.75
		$155,018.31

Book Department

Simon, E. D. *A City Council from Within.* Pp. 246. New York: Longmans, Green and Company, 1926.

In publishing this book, the former Lord Mayor of Manchester has performed an important service to students of municipal government. He has set forth in most interesting form the activities of the city council of a typical British city, and has given, for the first time, a detailed picture of the methods pursued in the handling of municipal business, and has also set forth the principles which should guide a city council in the conduct of its affairs. The volume is one which will be of great service to every student of municipal affairs.

L. S. Rowe.

Hansen, Allen Oscar. *Liberalism and American Education in the Eighteenth Century.* Pp. xxv, 317. New York: The Macmillan Company, 1926.

To the critical and sensitive mind a survey of the history of educational thought must inevitably be a depressing experience. As theory after theory passes in review, one is overwhelmed with a sense of the relative futility of the visions of social and educational philosophers. Surely, if fine aspirations and beautiful systems of thought can bring salvation to the world, the world should have been saved centuries ago. Viewed merely as fine art these visions from the past constitute a priceless heritage. But are they more than poetry and music? Are they more than fair and glorious dreams of the human spirit? Or can they ever be? Generation after generation witnesses the formulation and the reformulation of educational ideals. But these ideals appear ever to remain in a sphere apart. The development of educational practice seems to proceed stubbornly on its way on a different plane.

It is with some such feeling that one lays down Hansen's *Liberalism and American Education in the Eighteenth Century.* At a time when social institutions were peculiarly in a state of flux, some of the finest minds ever produced on or attracted to the American continent turned their attention to the contemplation of a system of education which would be in harmony with the ideals of the infant democracy. There were Franklin, Paine, Jefferson, Benjamin Rush, Noah Webster, Samuel Knox, Du Pont de Nemours, and a host of others. There was the American Philosophical Society with its selected American membership from Charleston to Boston and its French membership drawn from the best brains of France. On the part of these men, educators and men of affairs, there was an eagerness for human improvement and a faith in education as the instrument for this improvement which has not been equaled in subsequent generations. The country was new, the fetters of the Old World had been thrown off, and eyes were turned toward the future. One would think that under such a happy union of circumstance the scene was laid for the establishment of an enlightened system of education. But apparently such was not the case. The euphemistic characterization of the efforts of these Eighteenth Century liberals is that they were ahead of their times.

Mr. Hansen has rendered the students of politics and education an important service in rescuing from oblivion certain striking phases of the thought of the period that formed the American Union. Few persons realize the extraordinary interest in educational questions which was exhibited by the leading men of that time. Nor do they realize the fine quality of thought that went into the study of these questions. The close relationship between education and the form and ideals of society was clearly recognized. The creation of the Republic greatly stimulated educational discussion and gave rise to numerous plans for the establishing of a national system of education adapted to the genius of the new government.

The object of the author is to present in some detail the more important plans which were formulated. Following two short initial chapters dealing with the Dominant Ideas of the Eighteenth Century and the

Principles of the American Revolution, he devotes the remainder of the book, with the exception of a brief summary chapter, to a detailed analysis and criticism of the plans advanced by Benjamin Rush, Robert Coram, James Sullivan, Nathaniel Chipman, Samuel Knox, Samuel H. Smith, Lafitte du Courteil, Du Pont de Nemours, and Noah Webster. A period capable of producing these men would be an extremely fascinating and significant period in the history of any country. And a re-examination of their ideas serves as a fresh stimulant to an age, such as the present, which is disillusioned and unmoved by any great faith.

Mr. Hansen has made a valuable contribution to our educational literature. His study should now be supplemented by investigations designed to trace the relationships between this liberal thought on education and the actual evolution of our educational system. In spite of the melancholy note struck in the first paragraph of this review we would probably all agree that this thought was not wholly without its influence in the practical world. The Academy movement was most certainly greatly affected by it. And no doubt the development of our state systems of common schools and the liberalizing of the colonial college in the Nineteenth Century were partial fruits of this earlier intellectual adventure. But this period merits the most exhaustive study. Such a study might throw much light on a central problem in modern education, namely, the relation of the school to the state and to the forces that actually control education.

GEORGE S. COUNTS.

WOODDY, CARROLL HILL. *The Chicago Primary of 1926:* A Study in Election Methods. Pp. viii, 299. Chicago: University of Chicago Press, 1926.

This volume adds another to the series of scholarly studies of practical politics being produced by the students of Professor Charles E. Merriam. Mr. Wooddy has attempted to give us a realistic account of one primary election, leaving us to draw our own moral. Nevertheless, the author is not wholly objective in all places. For example, he is willing to say that "we must set down as a foremost ingredient in any scheme of improvement a patient and persistent effort to produce among coming generations, a more vigorous and enlightened type of citizenship" (p. 282). And in the very end of his book he does attempt to pass judgment on the Illinois primary law and to predict generally something as to the future of nominating systems, adding: "There is no need to despair of the future of our civic society—if only the citizen will vigorously participate in its activities, using the intelligence that he possesses and the knowledge that can be imparted to him by sound political education. Only his whole-hearted co-operation is required to assure the ushering in of a new day of civic competence and political righteousness" (p. 281). There must be some "catch" in this.

Generally, however, Mr. Wooddy's method is to present the facts, such as he has discovered them, as to the way in which the various factions in the two big parties, more especially the Republican party, in the City of Chicago made up its several slates for the primary election, to analyze the issues, to consider the various types of appeal made and to present an explanation of the results in terms of his own analysis. This has been done dispassionately and painstakingly. It is an extraordinary piece of work to have been accomplished by one who, a total stranger when he came to Chicago, remained there only a short while. Only those who are acquainted with Chicago can realize how thoroughly the work has been done. To others the question is bound to arise, "How did Mr. Wooddy find out all this?" for many, very many of his statements of fact are accompanied by no supporting evidence. He has relied largely upon the newspapers, but it is obvious that a good deal of the information could not have been obtained by any of the ordinary methods of research. Indeed the book is mostly first-hand reporting, for which the author's competence is amply demonstrated by his handling of the first chapter, "The Game, the Stakes, and the Players."

A few more such studies and a true conception of political processes will begin to reach the average citizen. We await with interest the results of Mr. Wooddy's study of European nominating methods.

VICTOR J. WEST.

KNIGHT, CHARLES K. *Advanced Life Insurance.* Pp. xi, 426. Price, $5.00. New York: John Wiley & Sons.

This book is properly named. It is "advanced" in the sense that it ably explains most of the more difficult, as well as the easier, phases of the science of life insurance. But, as the author aptly puts it, it is not advanced in the sense that it is difficult to understand.

The initial presentation of each subject is made in an elementary manner. The author, however, has very largely taken for granted the reader's conversion to an interest and belief in life insurance as a necessary, modern social institution. He has taken the tools of the science, such as interest tables, laws of probability, mortality tables and commutation columns, and has explained their construction and use in a most readable style. His discussion of the commutation columns is particularly noteworthy. Instead of mere page on page of continuous formulas he has interspersed much explanatory text.

The impression of scientific completeness remains as one reads the more commonly treated subjects of the book, such as valuation, expenses, sub-standard insurance, group insurance and accident and health insurance. The author's unique contributions are the following: the determination of the net cost to the policyholder; the determination of the rate of return on the "investment" element in life insurance policies; an analysis of this investment element so that it may be compared with other investments as regards safety and the rate of return; re-insurance in life insurance; and the organization and management of new companies. The appended compound interest tables, American Experience Table of Mortality and the tables derived therefrom, as well as the select mortality table, will all make the book most useful. One cannot help but feel that the author has effectually bridged the chasm between insurance textbooks and the more profound treatises on actuarial science.

STEPHEN B. SWEENEY.

BUCK, A.E. *Municipal Finance.* Pp. 562. New York: The Macmillan Company, 1926.

This volume, written by Mr. Buck in collaboration with other staff members of the National Institute of Public Administration, is a clear, concise statement of what every city's fiscal system ought to be. Professedly designed for city administrators and finance officers, it should be of value to all students of municipal affairs. It describes in some detail the correct procedure in such matters as budget making, cost accounting, purchasing, treasury management, assessment of property, and debt administration. Nine of the fifteen chapters are, in whole or in part, from the pen of Mr. Buck.

The outstanding weakness of the book, if it be a weakness, is its assumption that its recommendations are so obvious as to need no word of justification. Nearly every page is filled with a host of "shoulds"—"the budget summary should be supported by . . ." "it should show . . ." "it should be set up with . . ." "the total should agree with . . ." and the like, from cover to cover. Almost no reference is made to theory, and very little to the experiences of various cities.

As a matter of fact, the recommendations are nearly all sound. They represent the best in modern municipal financial administration. They are drawn in large measure from the experiences of the New York Bureau of Municipal Research, which has conducted more than a hundred surveys of city governments. But the average city administrator is not apt to be greatly influenced by a series of excathedra pronouncements. He must be told why as well as how.

The text is well written. Topics have been selected with considerable skill, and have been accorded space approximately in proportion to their importance. *Municipal Finance* is a real contribution to the literature of city administration.

AUSTIN F. MACDONALD.

The Urban Community. Edited by E. W. BURGESS. Pp. 12 and 268. Chicago: University of Chicago Press, 1926.

Professor Burgess, himself an able investigator in the field of urban life, has selected from the papers presented at the thirty-second annual meeting of the American Sociological Society those pertaining to city affairs, and has issued them in the shape of the present volume. The introduction consists of the annual presidential address for that year by Professor Parks. With penetrating insight he maps out the interfunctioning and development of the various constituents of the modern city. With considerable logical grounds the subsequent papers are grouped under these general headings: "Human Nature and the City," "Social Biology of City Life," "Statistics of the City," "Ecology of the City," and "Typical Studies in Urban Sociology."

Necessarily in a composite work of this nature not all the contributions included are equally pertinent to the central topic they are supposed to illuminate rather directly. Some two or three out of the thirty or more selections are quite general and would fit into a general work on Sociology rather better than here. However, they do give scientific or philosophic basis or background to their groups of subjects and they occupy proportionately little space. All of the remaining articles are directed specifically at their objective.

One of the great merits of *The Urban Community* lies in its scientific nature. Since all the papers are research papers they give an intensely scientific approach to the urban situation. The contributors are thinking scientifically, sometimes technically, each in their own field, about the things they treat. The sociology of city populations has been backward in producing investigations of this nature. Here we have quite a number of important contributions which serve to define clearly and accurately significant situations. Though running the risk of seeming to draw invidious distinctions, nevertheless I cite two examples of clear-cut scientific contributions: *The Statistical Relationship Between Population and the City Plan*, by E. P. Goodrich, and *The Rise of the Metropolitan Community*, by N. S. B. Gras. The work of Goodrich exhibits a form of statistical procedure by which great cities or metropolitan districts may forecast their total and gradient future populations and so project commensurate plans. Mr. Gras by analytical methods lays bare the economic functions of the metropolitan district, the conditions of its spectacular rise to power and the contributions it makes to society. But these two samples are no better than some or several others of this series which I would fain notice in detail.

Another merit is the organicity of view presented in the volume. Although the authors and tasks are diverse, the ensemble aids us to see the city as a vital unit made up of multiplicity of parts and conditions in conflict and co-operating with one another. Instead of a great assemblage of "movements," "slums," "ghettos," and "Little Italys," we are enabled to see it as an integrated entity.

J. M. GILLETTE.

DONOVAN, HERBERT D. A., PH.D. *The Barnburners.* Pp. viii, 140. New York: The New York University Press, 1926.

1830–1852 was a period of unusual, active, bitter factional political warfare in New York State. It was the period of numerous factions: Anti-Renters, Native Americans, Free Soilers, Hunkers, Loco Focos, Barnburners. The Anti-Rent party grew out of the discontent aroused by the survival of old manorial rights in the patroonships along the Hudson. They controlled ten counties and held the balance of power for two years. The Native Americans coterie was chiefly confined to New York City and was active principally in 1834 and 1844. Its support was given to those of American birth. Free Soilers constituted the anti-slavery element of the Democratic party, whereas the Hunkers were the standpatters of that party, "hunkering" after the spoils of office, though, as Horace Greeley sagely remarked, he could never discover that they "were peculiar in that." The Loco Focos were the extremists of the Democratic party and were also known as the Equal Rights party.

The Barnburners were the Progressives of that party, demanding the reimposition of the direct tax and a radical restriction of canal building, which had become the scandal of the time. It was not so much opposition to canal building *per se* as a demand that it cease until it could be done honestly. As one of its leaders, Samuel

Young said, "they call us barnburners. Thunder and lightning are barnburners sometimes; but they greatly purify the whole atmosphere, and that is what we propose to do."

Dr. Donovan makes these distinctions clear and gives what is on the whole a brief, but satisfactory study of Democratic politics in New York during what he very properly calls the "eventful" second quarter of the 19th century. His conclusions are that the cleavage within the Democratic ranks grew out of a difference of principle, real, not assumed; in larger fields, the Radicals adopted the more progressive ideals; their connection with Martin VanBuren (of whom we have a pleasant picture) was more incidental than fundamental; the failure of the Barnburners to secure their objects more fully was due in part to their being in advance of their time, but more largely to the political deficiency of their leaders; but in spite of the disappointments, the movement had permanent results of great importance. In Dr. Donovan's words: "Its fusion of three currents—demand for constitutional and fiscal reform, demand for slavery restriction in the territories, and resentment of Southern domination in the national politics—started a great impetus towards the break-up of the ruling Democratic party and contributed vitally to the successful formation of the next dominant party, the Republican."

CLINTON ROGERS WOODRUFF.

ELMER, MANUEL C. *Social Statistics:* Statistical Methods Applied to Sociology. Pp. 306. Los Angeles: Jesse Ray Miller, Publisher, 1926.

This small volume has grown out of the long teaching experience of its author in the field of social research. The strange dread of quantitative methods of analyzing social phenomena by social workers, now happily passing, together with the widespread ignorance of the elements of statistics give this volume peculiar timeliness.

The rudiments of statistics are covered, avoiding detailed mathematical analyses. The student of social happenings is given some of the tools he most urgently needs. Important chapter headings include: Sources of Data; Graphic Presentation; Ratio and Index Numbers; Probability and Error; Correlation.

The usefulness of the book is enhanced by a table of logarithms and a usable index.

The volume is planned to fill the needs of those students who have not specialized in mathematics but who urgently need a working grasp of the basic concepts of statistics. The plan is admirably carried out. Whether one desires to use elementary statistics, or simply to have a sound knowledge of them, they could not do better than to go through Elmer's *Social Statistics.*

HUGH CARTER.

BRAMER, JOHN PHILIP. *Parole.* Pp. 99. Published by the author, 477 Madison Avenue, New York, 1926.

This little manual, written by the Catholic Protective Society's parole supervisor in New York City, presents a brief outline of essential parole facts. The general reader will find here a simple statement of the nature, purpose and possible future development of parole. Social workers and parole agents will find an outline of the technique which should be applied in parole supervision. Criminologists will find a chronological history of the development of parole in the United States. The author also presents a plan of organization which might be used in the administration of parole in any of the larger American states. In conclusion he says, "No state wants careless, lifeless and inadequate supervision of delinquents after release. No state wishes listless, lazy, rubber-stamp parole systems which release delinquents with the calendar." And he adds, "The development of technique will greatly increase the cost of parole work, but in the long run the higher quality of service will prove a real social economy for the state." To which proposition, serious students of the subject will add an "Amen."

CLAIR WILCOX.

FRASER, HERBERT F. *Foreign Trade and World Politics.* Pp. xi, 346. Price, $2.50. New York: Alfred A. Knopf, 1926.

This volume is divided into two parts. The first ninety-three pages deal with economic background, and the remaining two hundred pages with political background. Appendices deal with the causes and results of the World War.

The four chapters of the first part set forth the principles that underlie international trade, and especially those principles that determined the past and present tariff policies of the United States. Professor Fraser is a believer in free trade and a pronounced internationalist who sees the importance of clear thinking on foreign affairs, since such thinking "will occupy an increasing part in all serious political discussion in the United States." These chapters constitute a sane analysis of free trade and protection, and are worth reading by any who have an interest in, but not a knowledge of, foreign trade and our international policies.

The second part of the book covers more debatable ground. To show how logical deductions from economic principles should be reshaped to meet the political exigencies of modern nationalism is an adventurous undertaking. The reshaping depends upon the political principles that you accept. Two and two make four in politics as in economics, but it may not be "politically advisable" to add them at all. In politics, especially international politics, it is often not a question of what is the best and most logical course to pursue, but what plan is advisable under the circumstances. Professor Fraser believes that imperialistic policies are detrimental to mother countries as well as to colonies, that imperialism never stimulated healthy foreign trade. His chapter upon "The Economics of Imperialism" presents a startling picture of the motives behind the national expansion of the United States and of the states of Western Europe. In the later chapters he deprecates the growth of nationalism, advocates cancellation of the European debts, and condemns our policy of isolation because it "is sheer folly to suppose that what goes on in Europe is no concern of ours" (p. 232). The Monroe Doctrine to-day is designated as "ill-defined and vague" (p. 229), and the chapter on our "Commercial Growth" points out that through this doctrine "we seem to be preparing for ourselves no end of complications and difficulties" (p. 230). Secretary Hughes declared in 1923 that the Monroe Doctrine is distinctly the policy of the United States and that we reserve to ourselves the definition, interpretation, and application of this doctrine. Professor Fraser believes that "This was Secretary Olney all over again, and it seems now to be the position of our State Department" (p. 287).

The last chapter—World Organization—is a natural conclusion to the argument running through the book. We need a World Court and a League of Nations; the United States should join both of them because "to-day nationalism is a more powerful influence in the United States than it is in any other country in the world" (p. 280).

Such views are worthy of attention because the presentation is straightforward and enlightening. The reviewer does not agree with them nor with the conclusions drawn therefrom. Professor Fraser implies that the present League of Nations works in accordance with the principles of economics and logic, while the reviewer believes that it has been a tool for political maneuvering. To condemn the United States for imperialism is to overlook divers occasions when no taint of imperialism colored our policy even if opportunity invited it. To condemn the present Monroe Doctrine is not enough. What policy should replace it? The State Department must work in a world of both economics and politics, but politics prevail.

HARRY T. COLLINGS.

LAPRADE, WILLIAM THOMAS. *British History for American Students.* Pp. 913. New York. The Macmillan Company, 1926.

Dr. Laprade has in his "British History for American Students" approached the subject from an interesting angle. His book is an attempt to treat English history from the viewpoint of the American student. Therefore, while writing a general narrative of English history, he devotes particular attention to those phases of the subject which intimately concern us through forming the background of our institutions.

With the object he has in view, the author divides his material into three periods, namely: (1) that preceding the settlement of America in which English institutions were organized and the land developed which is characterized likewise by the control of the landed classes; (2) that lying between the settlement of the English colonies and the granting of their independence largely influenced by the rising commercial class; (3) and finally the period from the American Revolution to recent times during which industrialists have been the leading element in English society. These three periods he designates under the headings of "The Land and the People," "The Nation and New Lands," and "Industry, Democracy and the Commonwealth of Nations."

Breaking the usual sequence the author starts his account with the Normans, returning in his third chapter to an account of the earlier inhabitants of the island. He likewise omits reference to the geographical background with which many accounts of English history are prefaced. The idea in mind seems to be to call attention at once to the forces mainly responsible for molding the English institutions in which Americans are most naturally interested. It was the Normans who "constituted the first ruling class that England as a whole ever had." They laid the foundations solidly "upon which their successors continuously built." "The coming of the Normans thus marks the last revolutionary break in the development of English Institutions." "On that account the local approach to English history," so the author thinks, "is to begin the study of the subject where the Normans began their work."

As succeeding chapters are examined it is clear that Dr. Laprade has laudably molded social, economic, cultural and political factors into a growing synthesis, displaying the natural influence of one upon another, rather than assigning such material to distinct chapters or adding it as an afterthought. The book possesses real merit in its interpretation of institutional development. In many instances it gives a much more rounded account of this than that found in other texts of similar dimensions.

In examining the contents, however, the fifteen pages allotted to the Reformation, placed in the chapter entitled "The Birth of the Nation," appear rather a scanty treatment of such a subject, although much is compressed in a small space. Likewise, while discussing the formation of English nationalism, it appears that some mention of the rising national spirit in and about Henry III's reign and the factors which were then promoting it, as also the effect of the Hundred Years War in that direction, should have been explained somewhere.

Insofar as the make-up of the text is concerned, it would seem that it would have been much more teachable if paragraph headings had been introduced to avoid heavy appearance and assist the student in focusing his thought. Likewise in some cases, care in avoiding too much detail would have improved its readability. However, these are matters concerning which considerable difference of opinion may be entertained. As indicated above, the book well deserves attention and careful study.

JAMES E. GILLESPIE.

WALLING, WILLIAM ENGLISH. *American Labor and American Democracy*. Pp. 417. Price, $2.50. New York: Harpers & Brothers, 1926.

Those who wish for an authoritative account of the principles and policies of the organized labor movement in the development of American Democracy during the past century will welcome this volume. The author, a social scientist by training and an active participant in the activities of organized labor during the past decade, is eminently qualified for his task.

The volume under review shows the earmarks of painstaking research and high literary quality. The book is divided into two parts: the first undertaking to give an interpretative account of American labor as an important branch of American democracy, while the second aims to disillusion the reader with respect to European preconceptions that American labor is years behind British labor in social and economic development. According to the author its method of working out its salvation has been different though by no means inferior to that of the British Labour party.

American society in its process of evolution has already changed from a simple agrarian democracy with a small and uninfluential wage-earning class into a complex commercial society with a large influential class of organized wage-earners largely dominated by the urban element. During this transitional period, labor has not remained static but has been gradually gaining ground on organized capital in the struggle for economic supremacy. Americans of all classes have been great believers in the efficacy of political panaceas for all kinds of economic ills, and it has taken labor some time to formulate a satisfactory political *modus operandi*.

The ventures of labor organizations upon the sea of politics before 1880 proved disastrous, but since that time under the leadership of the American Federation of Labor with its non-partisan policy, labor has become a progressively important factor in the political arena. Labor's main and ultimate economic-political goal is the democratization of our industrial society.

Labor believes in the axiomatic truth that the welfare of the whole of society is more important than that of any of its parts or classes, and, that while class legislation as such does not make for the safety of democracy, it is nevertheless justifiable as a means of securing its ultimate goal of social and industrial equity for all classes of society.

The author quotes freely the political utterances of leaders of organized labor. He says that labor is united as to the supreme importance of the practicability of electing progressives to Congress regardless of party affiliations. Repeatedly the Federation has explained that it is "partisan to men and to measures, partisan to candidates of parties, to principles and to planks of party platforms, but that it is not partisan to parties."

The author points out that it has been impossible in the past to get thoroughgoing co-operation between labor and the agricultural producer. Perhaps the chief barrier has been the difference in racial composition of the metropolitan wage-earning class and the rural class. However, the two classes are giving evidence of their growing recognition of mutuality of interests, and, with immigration greatly reduced, the prospects for the consummation of such an alliance in the near future is getting brighter every day.

Labor by pooling its resources is meeting with equally as great success in the field of banking as in that of politics. It is demonstrating its capacity for management of industry as organized wage-earners. This marks the beginning of a new era in unionism and, as Professor Carver contends, is causing a gradual and peaceful revolution toward a democratic capitalism.

In conclusion, the author points out that our government took its political form before the industrial revolution in this country and is now undergoing a process of adjustment to present-day needs.

This book deals with topics many of which are controversial and provocative of dissension, and will of course meet criticism at the hands of the thick-skinned and hidebound reactionaries. It is well suited to the class-room requirements for students of labor problems and to the general reader, and it will serve as a useful reference book in this field of American Labor History.

THOMAS S. LUCK.

HINKHOUSE, FRED JUNKIN. *The Preliminaries of the American Revolution as Seen in the English Press, 1763–1775.* Pp. 216. Price, $3.50. New York: Columbia University Press, 1926.

This is a study of British public opinion on the subject of the difficulties with the Colonies subsequent to the Seven Years' War and culminating in the Revolution. The author has conscientiously read the files of the British newspapers during that time and has achieved a narrative of some interest, thickly studded with quotations from his sources.

For, after all, nothing very startling is unearthed. We find that there was much sympathy with the Colonies expressed in England; but any student of American history, except those whose studies are limited to Commissioner Hirshfield's one hundred per cent American text-books, knows that. One is rather surprised at the frankness and even violence of the anti-government sentiment, and (from the standpoint of recent events in our own country) at the absence of censorship. The nature of the early British press is of interest, as is the wide diffusion of an intelligent interest in politics, coupled with a gift of pungent literary expression. It was the age of the political pamphleteer and the letter-writer, and much permanent literature was cast in the form of journalism.

On the whole, however, it seems as if much laborious research and able writing had been expended on a subject of questionable value.

J. H. LEEK.

CORY, M. A. *The Rise of South Africa, 1838–46.* Pp. xviii, 546. Price, $9.00. New York: Longmans, Green and Company, 1926.

This is the fourth of a series begun fifteen years ago. Two more volumes are promised. The author is not a professional historian, but has undertaken, in addition to teaching science in Rhodes University, Grahamstown, South Africa, extensive researches in history. He has made good use of his opportunities and has drawn upon such sources as the *Grahamstown Journal*, the important Craig Dhu Collection, and the voluminous materials in the archives of the Union Government. The account of the Great Trek is based upon the untranslated works of Preller, *Piet Retief*, *Voortrekkermense*, and *Dagboek van Louis Triegardt*. The importance of this local material is demonstrated forcibly on page 333. The official material would seem to show that everything was quiet along the border when in reality cattle were being stolen, farmers were being murdered by the score, and their homes burned by the marauding Kaffirs. The author acknowledges his especial indebtedness to the late Dr. Theal, not only because of the material contained in his works, but more particularly because of the inspiration and encouragement gained from personal contact.

The volume covers eight years of South African history, 1838–46, and is principally concerned with the Great Trek, the beginnings of Natal and the Orange Free State, and the Kaffir War of 1846. Nearly one-half of the volume is devoted to the latter event. Incidental treatment is accorded such topics as education, the establishment of pioneer churches, and the emigration movement of 1844–45. In some respects the story is reminiscent of the American frontier; the movement of population into new regions, the conflicts with the aborigines, treaty making, and finally, the bad feeling between the burghers and the regulars during the Kaffir War reminds the reader of certain incidents of the French and Indian War. In a work of this character a mass of detail is of necessity introduced, yet out of the maze of Boer, Kaffir and Zulu names, mingled with a host of local happenings, certain general truths emerge. The Great Trek was caused almost entirely by the desire of the Boers to get away from British rule. The home government was but slightly concerned with the affairs of the remote South African frontier, and was inclined to favor the natives at the expense of the Dutch and English frontiersmen. The officials at Cape Town were incompetent and ignorant of frontier conditions.

The author is decidedly sympathetic with the Boers, but honestly records facts unfavorable to them. The lack of adequate maps is a serious defect, making it impossible to follow the narrative intelligently in the latter part of the book, where the names of obscure places, rivers, etc., abound. The reader who would like to know more about the sources is aided slightly by the occasional footnotes.

ARTHUR N. COOK.

HOYT, ELIZABETH ELLIS. *Primitive Trade.* Pp. 191. Price, 7/6 net. London: Kegan Paul, Trench, Trubner & Company, Ltd., 1926.

The purpose of the authoress is stated by herself as follows: "Our study makes no claim . . . to be a thorough investigation of all the aspects of primitive economic psychology. Its purpose is simply to use the materials of anthropology as the best available materials for a fuller understanding of economic value as it exists among ourselves." Her method is essentially inductive. The book traces the development of the modern theory of value by means of the description and elaboration of three mental processes which are held to be necessary to its evolution: (1) The development of interests. (2) The objectifying of interests. (3) The expansion of trade. The source, development and diffusion of interests are well treated. The part played by habit is likewise aptly stressed. The development of modern theories of exchange is rather logically set forth and compels attention.

The definition or explanation of the term "primitive man" is suggested, but dealt with inadequately. Those people living to-day under a different cultural régime than ours, commonly known as primitive peoples, are the type accepted as possessors of the proper qualifications for the purpose of the book. Is it possible to arrive at "a fuller understanding of economic value as it exists among ourselves," by a study of peoples whose cultures are as venerable as our own? The question deserves greater attention than it here receives. While the contention of the book is that there are other motives than economic motives directing, and which have directed, men's activities, economic motives are conceded to preponderate to-day. "Economic motives teach civilization as no other motives have ever done." The conclusion drawn is that the so-called economic interpretation of history is one side of a process of development of which the ethical interpretation is the other. The book attains its purpose, and is well worth reading.

WALTER E. MACDONALD.

BREWSTER, A. J. *An Introduction to Retail Advertising.* Pp. 319. Price, $5.00. Chicago: A. W. Shaw Company, 1926.

Mr. Brewster has endeavored to "educate the retailer in the principles of advertising and in their application to his problems." The book is essentially a selection, compilation and adaptation of facts and principles to fit the retailer's needs.

The author first takes up the field of retailing, including the place of the retail store in business and a discussion of retail market surveys. He next discusses advertising as it affects the retailer, including manufacturers' advertising, the purpose of retail advertising and how retail advertising and manufacturers' advertising should work together.

Collecting data and writing advertisements is taken up in some detail. Making advertisements effective by type, layout and illustration is next discussed rather fully, followed by a section on advertising mediums. This section includes a discussion of newspapers, direct (mail) advertising, window display and show cards.

The problems of department stores, of chain stores and of the small town store are each given one chapter. The final section deals with the help available from manufacturers, sellers of space and from other retailers. The final chapter deals with truth in advertising.

The book serves to indicate to the retailer the ways in which he can improve his advertising and provides him with a convenient compilation of elementary facts and principles adapted to his needs. Both functions are well performed.

KENNETH GRUBB.

LINCOLN, EDMOND E. *Testing Before Investing.* Pp. 319. Price, $5.00. Chicago: A. W. Shaw Company, 1926.

Laying down any specific rule of thumb for testing investments is almost an impossibility, due to the divergent factors which not only govern the physical and financial condition of a corporation, but also the market of its securities. In attempting such a task, one is liable to omit certain vital elements which may act as a safeguard to a particular class of securities.

It is a difficult task for a theorist to place himself on the same level of intelligence as the average investor. The part human nature plays in investment is the biggest obstacle to overcome, and even the security laws of the different states do not prevent it from diverting the small investor from the paths of sound judgment. All tests are thrown overboard, if he is convinced by an emotional appeal that he will have the opportunity to enrich himself without labor. In most every case, human nature is too eager to open the door for opportunity, when it is only the wolf.

Mr. Lincoln's treatment of his subject is not an exhaustive analysis (his work being confined to a small book of less than one hundred pages), but by emphasizing salient points in outline form, he formulates some basis upon which the small investor may use his own judgment. Mr. Lincoln acknowledges that there is no one formula for successful investment, since it is accomplished only through correct information and sound judgment. Some of his tests are beyond the analysis of the small investor and can only be applied by a specialist in securities, who has recourse to competent records. His book, however, makes an excellent primer for the uninitiated.

PAUL W. LEITCH.

GRIMES, WILLIAM A. *Financing Automobile Sales by the Time-Payment Plan.* Pp. x, 116. Chicago: A. W. Shaw Company, 1926.

The study which received the first prize for monographs in the field of Business Development and the Modern Trust Company offered in 1926 by the Chicago Trust Company.

Index

Accident and Health Insurance, Modern Trends in. Austin J. Lilly, LL.B., 144–53.

Accident and health insurance: conditions of disabilty, 147, 148; development of, 144; diversity in forms, 150; coverage and indemnity basis, 148, 149; experiments, 145, 146; life indemnity and the non-cancellable form, 152, 153; modern trend, 145; specialized coverages, 149; standardization, 151; state action, 146, 147.

Accident Prevention, Insurance Companies and. James S. Kemper, 137–143.

Accident prevention: merit rating system, 138, 139; movement toward, 137; rise of insurance companies, 138; scope of work, 140–3.

Actuarial methods: fraternal life, 98; substandardized life, 17–9; teachers' pensions, 207.

Agents and brokers: *see* taxes.

American Academy of Political and Social Science, Report of Board of Directors of, December 31, 1927, 220–3.

American Bar Association, contributions to regulation, 190.

Assets: *see* insurance companies.

Automobile Insurance. H. P. Stellwagen, 154–62.

Automobile Insurance, Compulsory. Harry J. Loman, Ph.D., 163–70.

Automobile insurance: collision, 158; compulsory, *see* compulsory automobile; experience rating, 161; fire, 158; five forms of, 154; hazards, 154; policy contract, 156; premium charges, 159; premium volume, 155; problems, 161, 162; property damage, 157; public liability, 156, 157; rate-making, 160; theft, 158.

Bank guaranty: *see* state insurance funds.

Beneficiary Provisions Under Modern Life Insurance Policies. Lelia E. Thompson, LL.B., 86–96.

Beneficiary provisions of life insurance policies: business protection, 95; drafting clauses, 95; expediting settlements, 92; experience, 88; "Funded Trust," 92; legal background, 86, 87; local statutes, 89; policies as securities, 93, 94; policy contracts, 93; survivorship, 90; trustee and minor, 91.

Benefits: disability protection, 47, 49; fraternal life insurance, 101, 102; group life insurance, 33.

Bonding: *see* State Insurance Funds.

Book Department, 224–34.

Brosmith, William. Tendencies in State Supervision of Insurance, 185–90.

Buisness protection through insurance, 94.

Casualty insurance: *see* automobile, accident prevention, compulsory automobile, disability, workmen's compensation.

Compulsory Automobile Insurance. Harry J. Loman, Ph.D., 163–70.

Compulsory automobile insurance: alternate plan, 168–70; analysis of arguments against, 166–8; arguments against, 164, 165; economic losses, 163; Massachusetts act, 164.

Co-operation Between Life Insurance and Trust Companies. Edward A. Woods, 9–15.

County and municipal taxes: *see* taxes.

Coverage: *see* accident, health, multiple line.

Crop insurance: *see* weather.

Current Rate-making Procedure in Workmen's Compensation Insurance. C. A. Kulp, Ph.D., 171–80.

Disability: *see* accident and health.

Disability protection: analysis of claims, 44, 45; development, 42; defined, 43, 50; limits, 48; modern provisions 43, 44, 50, 51; risk, 45, 46; significance, 51, 52.

Ecker, Frederick H. Investment Tendencies of Life Insurance Companies, 21–6.

Education and Philanthropy, Life Insurance as an Aid to. John A. Stevenson, Ph.D., 53–57.

Education, insurance as an aid to, 53–7.

Fire Department Tax: *see* taxes.

Fire Insurance Rates, The Regulation of. Robert Riegel, Ph.D., 114–20.

Fire insurance rate regulation: anti-trust and anti-compact laws, 117; existing legislation, 115, 116; laws against discrimination, 117; laws on examination of rating bureaus, 120; rate laws, 118, 119, 120; review of legislation, 114.

Fire marshal tax: *see* taxes.

Fire Prevention work of Stock Fire Insurance Companies, The. H. A. Smith, 103–7.

Fire prevention work: centralizing fire loss records, 104; safeguarding cities, 105; serving the public, 103; special studies, 106–7.

Fitzgerald, J. Anderson, Ph.D. Inspection Reports on Persons as a Factor in Life Insurance, 77–85.

Foreword, v–vii.

Frankel, Lee K. The Rôle of the Life Insurance Company in Health Conservation Programs, 1–8.

Fraternal Life Insurance. Charles K. Knight, Ph.D., 97–102.

Fraternal life insurance: actuarial solvency, 98, 99; benefits, 101, 102; commercial *vs.*, 100; defined, 97; history, 97; progress, 102; reason for increased cost of, 101.

Frost insurance: *see* weather.

General problems: *see* instruction; multiple line; state insurance funds; state supervision; taxes.

Government control: *see* regulation.

GRAHAM, WILLIAM J. Group Life Insurance, 27–33.

GROUP LIFE INSURANCE. William J. Graham, F.A.S., 27–33.

Group life insurance: benefits, 33; classes, 31; defined, 31; growth, 29; methods, 27; need for, 28; organized effort toward, 29.

GUARANTEE OF MORTGAGE BONDS BY SURETY COMPANIES. Edward L. McKenna, Ph.D., 131–6.

Hail insurance: *see* weather.

Health conservation bureau, need for joint, 7.

Health conservation campaigns: foreign policy, 3; progress of, 1, 2; propaganda, 2; work of Metropolitan Life Insurance Company, 4.

HEALTH CONSERVATION PROGRAMS, RÔLE OF THE LIFE INSURANCE COMPANY IN. Lee K. Frankel, Ph.D., 1–8

HEALTH INSURANCE, MODERN TRENDS IN ACCIDENT AND. Austin J. Lilly, LL.B., 144–53.

Health insurance: *see* accident and health.

HENDERSON, ROBERT. Insurance of Substandard Lives, 16–20.

HOFFMAN, G. WRIGHT. Weather Form of Insurance, 121–30.

HOLCOMBE, JOHN MARSHALL, JR. The Modern Life Underwriter, 58–63.

HUEBNER, S. S. Foreword, v.

HUEBNER, S. S. Insurance Instruction in American Universities and Colleges, 213–9.

INSPECTION REPORTS ON PERSONS AS A FACTOR IN LIFE INSURANCE. J. Anderson Fitzgerald, Ph.D., 77–85.

Inspection reports: as to medical examiners and agents, 83; as to women, 81; character of, 79, 80; claims, 83; how made, 78; means of selecting risks, 77, 78; necessity for, 77; value of, 81; where chief reliance, 84.

INSTRUCTION IN AMERICAN UNIVERSITIES AND COLLEGES, INSURANCE. S. S. Huebner, Ph.D., 213–9.

Instruction: development in insurance, 213–4; future of, 216–9; improvement in, 215.

INSURANCE, AUTOMOBILE. H. P. Stellwagen, 154–62.

INSURANCE COMPANIES AND ACCIDENT PREVENTION. James S. Kemper, 137–43.

Insurance funds: *see* State insurance funds.

INSURANCE INSTRUCTION IN AMERICAN UNIVERSITIES AND COLLEGES. S. S. Huebner, Ph.D., 213–9.

INSURANCE OF SUBSTANDARD LIVES. Robert Henderson, F.I.A., F.A.S., 16–20.

INSURANCE TAXES, SPECIAL. James L. Madden, J.D., 191–201.

INSURANCE, TENDENCIES IN STATE SUPERVISION OF. William Brosmith, 185–90.

INSURANCE, WEATHER FORMS OF. G. Wright Hoffman, Ph.D., 121–30.

Insurance: *see* Table of Contents, page iii, *also* accident and health; automobile; benefits; compulsory; disability; education and philanthropy; fire; fraternal life; group; instruction; life; multiple line; regulation; salary savings; state insurance funds; state supervision; taxes; trust companies; use and occupancy; weather; workmen's compensation.

INVESTMENT TENDENCIES OF LIFE INSURANCE COMPANIES. Frederick H. Ecker, LL.D., 21–6.

Investments: *see* life insurance companies.

KEMPER, JAMES S. Insurance Companies and Accident Prevention, 137–43.

KNIGHT, CHARLES K. Fraternal Life Insurance, 97–102.

KULP, C. A. Current Rate-Making Procedure in Workmen's Compensation Insurance, 171–80.

LARKIN, HAROLD F. Non-Medical Life Insurance, 64–9.

License tax: *see* taxes.

LIFE INSURANCE AND TRUST COMPANIES, COOPERATION BETWEEN. Edward A. Woods, 9–15.

LIFE INSURANCE AS AN AID TO EDUCATION AND PHILANTHROPY. John A. Stevenson, Ph.D., 53–7.

LIFE INSURANCE COMPANIES AND PENSION PLANS. M. Albert Linton, F.A.S., F.I.A., 34–41.

LIFE INSURANCE COMPANIES, INVESTMENT TENDENCIES OF. Frederick H. Ecker, LL.D., 21–6.

LIFE INSURANCE COMPANY IN HEALTH CONSERVATION PROGRAMS, THE RÔLE OF THE. Lee K. Frankel, Ph.D., 1–8.

LIFE INSURANCE, FRATERNAL. Charles K. Knight, Ph.D., 97–102.

LIFE INSURANCE, GROUP. William J. Graham, F.A.S., 27–33.

LIFE INSURANCE, INSPECTION REPORTS ON PERSONS AS A FACTOR IN. J. Anderson Fitzgerald, Ph.D., 77–85.

LIFE INSURANCE, NON-MEDICAL. Harold F. Larkin, A.A.S., 64–9.

LIFE INSURANCE POLICIES, BENEFICIARY PROVISIONS UNDER MODERN. Lelia E. Thompson, LL.B., 86–96.
LIFE INSURANCE POLICY HOLDER, THE DEVELOPMENT OF ADEQUATE PROTECTION FOR THE DISABLED. Edward W. Marshall, F.A.S., F.I.A., 42–52.
Life insurance: *see* pages 1–97, *also* benefits; disability; education; fraternal; group; health; inspection reports; investments; non-medical; substandard lives; trust companies.
Life insurance companies: activities, 12, 13; assets, 21; bonds, 22; insurance holdings, 22; mortgage loans, 22; public utilities, 23; real estate, 24; railroad securities, 23; trend in investments, 25; trust companies and, 9; trust companies versus, 10. *See* pensions.
Life span, lengthening of, 6.
Life underwriter: appeal opportunity, 60; application of sales research, 58; future of, 63; need for intelligent, 61; the modern, 62, 63.
LIFE UNDERWRITER, THE MODERN. John Marshall Holcombe, Jr., LL.B., 58–63.
LILLY, AUSTIN J. Modern Trends in Accident and Health Insurance, 144–153.
LINE COVERAGE, MULTIPLE. Benjamin Rush, 181–4.
LINTON, M. ALBERT. Life Insurance Companies and Pension Plans, 34–41.
LOMAN, HARRY J. Compulsory Automobile Insurance, 163–70.

MADDEN, JAMES L. Special Insurance Taxes, 191–201.
MARSHALL, EDWARD W. The Development of Adequate Protection for the Disabled Life Insurance Policy Holder, 42–52.
Massachusetts Compulsory Automobile Liability Security Act, 164.
McCAHAN, DAVID. State Insurance Funds: Optional and Monopolistic, 202–12.
McKENNA, EDWARD L. The Guarantee of Mortgage Bonds by Surety Companies, 131–6.
Merit Rating System, accident insurance, 138, 139.
Miscellaneous taxes: *see* taxes.
Modern Marine Insurance Bill, 181.
MODERN TRENDS IN ACCIDENT AND HEALTH INSURANCE. Austin J. Lilly, LL.B., 144–53.
Morris Company Plan, 35.
Mortality rates, decline in, 6.
MORTGAGE BONDS BY SURETY COMPANIES, THE GUARANTEE OF. Edward L. McKenna, Ph.D., 131–6.
Mortgage Bonds: conditions of, 134–35; form of guarantee, 133, 134; guarantee of, 131, 132; reason for, 132, 133.
MULTIPLE LINE COVERAGE. Benjamin Rush, 181–4.
Multiple line coverage, 181–4.
Municipal taxes: *see* taxes.

National Board of Fire Underwriters, fire prevention work of, 103–7.
New York, regulation limits, 187.
NON-MEDICAL LIFE INSURANCE. Harold F. Larkin, A.A.S., 64–9.
Non-medical life insurance: adoption, 64; benefits of plan, 67, 68; plan outlined, 65–9.

OCCUPANCY INSURANCE, USE AND. Willis O. Robb, 108–13.
Occupancy insurance: *see* use.

PENSION PLANS, LIFE INSURANCE COMPANIES AND. M. Albert Linton, F.A.S., F.I.A., 34–41.
Pension systems: accrued liabilities, 39; considerations as to best plans, 38; level premium plan, 37; Morris Company plan, 35; principles of, 34; single premium deferred annuity plan, 35, 40, 41.
Philanthropy, insurance as an aid to, 53–7.
PHILANTHROPY, LIFE INSURANCE AS AN AID TO EDUCATION AND. John A. Stevenson, Ph.D., 53–7.
PLACE, RICHARD L. Salary Savings Insurance, 70–6.
Policies: *see* various kinds of insurance.
Premium income, 213.
Premium tax: *see* taxes.
Premiums: *see* various kinds of insurance.
Property insurance: *see* fire insurance; fire prevention; mortgage bonds; regulation; use and occupancy, weather.
PROTECTION FOR THE DISABLED LIFE INSURANCE POLICY HOLDER, THE DEVELOPMENT OF ADEQUATE. Edward W. Marshall, F.A.S., F.I.A., 42–52.
Public deposit guarantees: *see* State insurance funds.
Publication fee: *see* taxes.

Rain insurance: *see* weather.
Rate-making: automobile, 160; workmen's compensation, 171–80.
Reciprocal taxes: *see* taxes.
REGULATION OF FIRE INSURANCE RATES, THE. Robert Riegel, Ph.D., 114–20.
Regulation: American Bar Association and, 190; limits imposed by New York, 187; modern tendencies, 189; opinions *re*, 187, 188; readjustment of laws, 186; remedial legislation, 186; steps toward, 185.
Report of the Board of Directors of the American Academy of Political and Social Science, December 31, 1927, 220–3.
Retaliatory taxes: *see* taxes.

Riegel, Robert. The Regulation of Fire Insurance Rates, 114–20.

Risks: disability protection, 45, 46; inspection reports and, 77–85.

Robb, Willis O. Use and Occupancy Insurance, 108–13.

Rôle of the Life Insurance Company in Health Conservation Programs, The. Lee K. Frankel, Ph.D., 1–8.

Rush, Benjamin. Multiple Line Coverage, 181–4.

Salary Savings Insurance. Richard L. Place, 70–6.

Salary savings plan: employer's problem, 73; faulty selling methods, 74, 75; features of, 70, 71; future of, 76; need for, 71, 72; trend of, 75.

Savings Insurance, Salary. Richard L. Place, 70–6.

Single premium deferred annuity plan: pension systems, 34, 40, 41.

Smith, H. A. The Fire Prevention Work of Stock Fire Insurance Companies, 103–7.

Special Insurance Taxes. James L. Madden, J. D., 191–201.

State employes pension: *see* state insurance funds.

State Insurance Funds: Optional and Monopolistic. David McCahan, 202–12.

State insurance funds: bank guaranty, 209. 210; bonding, 212; crop, 209; enactment of, 202, 208; life, 211; public deposit guaranty, 211; state employes' pensions, 208; state property, 210; teachers' pensions, 206, 207; Torrens Title, 212; workmen's compensation, 204–6.

State property, insurance of: *see* state insurance funds.

State Supervision of Insurance, Tendencies in. William Brosmith, 185–90.

Stellwagen, H. P. Automobile Insurance, 154–62.

Stevenson, John A. Life Insurance as an Aid to Education and Philanthropy, 53–7.

Stock exchange plan, pensions systems and, 35, 40, 41.

Stock Fire Insurance Companies, The Fire Prevention Work of. H. A. Smith, 103–7.

Substandard Lives, Insurance of. Robert Henderson, F.I.A., 16–20.

Substandard lives: basis of insurability, 19; circumstances surrounding, 16; methods employed in insuring, 17, 18; protection for, 16.

Surety Companies, The Guarantee of Mortgage Bonds by. Edward L. McKenna, Ph.D., 131–6.

Surety companies, guarantees: *see* mortgage bonds.

Taxes, Special Insurance. James L. Madden, J. D., 191–201.

Taxes: Agents' and brokers' licenses, 195; collections, 200; county and municipal, 197; expenses *vs.* special, 192; fire department, 196; fire marshal, 196; increases, 191; lack of uniform methods, 193; license, 195; premium, 193, 194; publication fee, 195; recommendations, 198, 199; reciprocal, 197; retaliatory, 197; trend of special, 191; types of, 201; who pays the, 192.

Tendencies in State Supervision of Insurance. William Brosmith, 185–90.

Thompson, Lelia E. Beneficiary Provisions under Modern Life Insurance Policies, 86–96.

Tornado insurance: *see* weather.

Torrens Title: *see* State insurance funds.

Trust companies, 14, 15.

Trust Companies, Co-operation Between Life Insurance and. Edward A. Woods, 9–15.

Underwriter, The Modern Life. John Marshall Holcombe, Jr., LL.B., 58–63.

Underwriter: *see* life underwriter.

Universities and Colleges, Instruction in American. S. S. Huebner, Ph.D., 213–9.

Use and Occupancy Insurance. Willis O. Robb, 108–13.

Use and occupancy insurance: defined, 108; exclusions, 108, 109; method of computing rates, 111; restrictions and limitations, 110; tendencies, 111; unsuitability of standard fire policy, 112, 113.

Weather Forms of Insurance. G. Wright Hoffman, Ph.D., 121–30.

Weather insurance: crop, 125; defined, 121; frost, 124, 125; hail, 122, 123, 129; loss due to, 125, 126, 127, 128; rain, 123, 124; the outlook, 128, 130; tornado, 121, 122.

Woods, Edward A. Co-operation Between Life Insurance and Trust Companies, 9–15.

Workmen's Compensation Insurance, Current Rate-Making Procedure in. C. A. Kulp, Ph.D., 171–80.

Workmen's compensation rate-making: actuarial difficulties, 172; difficulties due to use of old data, 172; difficulties due to insufficient data, 172; giving State benefit of own experience, 177; loading, 178; on interstate experience, 173–5; pitching rate levels; reverting national pure premiums, 176; socio-economic difficulties, 172; tendencies, 179–80; under ideal conditions, 173. *See also* state insurance funds.

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CONTENTS

PAGE

FOREWORD . . . v

HUMAN FLIGHT THROUGHOUT THE AGES . . . 1
Adrian Van Muffling, Aeronautical Engineer

THE AIRPLANE . . . 7
Dr. Michael Watter, M S A.E., Design Engineer, Chance Vought Corporation

THE FIRST FLIGHT . . . 14
Jessie E. Horsfall, Editor *Aero Digest*

AERONAUTICAL EDUCATION . . . 20
Alexander Klemin, Daniel Guggenheim School of Aeronautics, College of Engineering, New York University

LEARNING TO FLY . . . 23
Casey Jones, Curtiss Flying Service, Inc.

AIRCRAFT ENGINEERING . . . 27
T. P. Wright, B S., Chief Engineer, Airplane Division, Curtiss Aeroplane and Motor Co Inc.

THE STORY OF THE AIRPLANE ENGINE . . . 34
George F. McLaughlin, Technical Editor, *Aero Digest*

AIRPLANES IN NATIONAL DEFENSE . . . 38
General William Mitchell, D S.C., D.S.M., Formerly Commander Air Forces, A. E. F , and Director of Military Aeronautics, United States Army

THE AIR MAIL . . . 43
Honorable W. Irving Glover, Second Assistant Post Master General

AERIAL PHOTOGRAPHY . . . 49
Sherman M. Fairchild, President, Fairchild Aviation Corporation

AIRPORTS AND LANDING FIELDS . . . 56
William E Arthur, President, William E. Arthur & Co., Inc.

AMERICAN AIR TRANSPORT . . . 68
Archibald Black, Air Transport Engineer and author of *Transport Aviation*

ASPECTS OF COMMERCIAL AVIATION IN THE U. S. A. . . . 71
George B. Post, Lieutenant, (J G.) Naval Air Reserve

LIGHTER-THAN-AIR-CRAFT . . . 79
P. W. Litchfield, President, Goodyear Tire and Rubber Company

AERIAL GLOBE TROTTING . . . 86
Lieutenant Leigh Wade, Member of the United States Air Service and Round-the-World Flyer

THE FIRST TRANS-ATLANTIC FLIGHT . . . 94
Lieutenant Walter Hinton, Pilot on the *NC-4*—the First Plane to Cross the Atlantic

NAVIGATING THE PLANE . . . 101
Brice Goldsborough, Vice-President, Pioneer Instrument Company

METEOROLOGY AND ITS APPLICATION TO FLYING . . . 107
Willis Ray Gregg, A.B , Meteorologist in Charge of Aeronautical Division, U. S. Weather Bureau.

AIR REGULATIONS . . . 118
William P. MacCracken, Jr., Assistant Secretary of Commerce for Aeronautics

TWO SCIENCES—MEDICAL AND AERONAUTICAL . . . 124
Arthur La Roe, M D., Captain (Flight Surgeon), Medical Officers' Reserve Corps, United States Army

AVIATION INSURANCE . . . 130
Charles H. Holland, President, the Independence Companies

AIRCRAFT MERCHANDISING PLANS OF THE ALEXANDER AIRCRAFT COMPANY 137
J. Don Alexander, President

CLEARING THE AIR FOR COMMERCE . . . 141
W. Jefferson Davis, Lieutenant-Colonel, Reserve Officers Corps. Formerly War Department Legal Adviser in Europe

ARE WE AIRWORTHY? . . . 151
Lieutenant Donald Duke, Chief, Airways Section, Air Corps, United States Army

SOME ECONOMIC ASPECTS OF AIR TRANSPORTATION . . . 159
Stephen B. Sweeney, Instructor in Insurance, University of Pennsylvania

AIR TRANSPORTATION 182
Anthony H. G., Fokker Atlantic Aircraft Corporation

BOOK DEPARTMENT. . . . 188

INDEX. . . . 203

FOREWORD

Those with skill and experience who have written on aviation can be divided into two classes.

The first group includes those who write of dare-devil deeds and death-defying adventures, placing the subject on such a heroic plane that it frightens the ordinary individual into believing that in order to fly he must have had from birth all the essentials required to develop at maturity a super-man.

The second group—the technicians—know so much about the subject that they write as if learning to fly was as easy as learning to walk, and the only reason that everyone doesn't fly is because of neglectful parents who have overlooked this essential of early training.

In a few years the young man and even the young woman who has not learned to fly will be regarded as natural phenomena as today are those who cannot drive automobiles.

I mention this because I have observed that the average man in search of aeronautical information and dependent upon the ordinary channels to secure it, either finds himself delving into mysterious aerodynamic formulae that to the beginner are as useless as trigonometry to a rhinoceros in British East Africa; or discovers himself entranced by the many adventures of the intrepid birdman who has answered the "call of the air" at so much per word in the popular fiction magazines.

In collecting the material for this issue of *The Annals*, I have endeavored to secure from authentic sources such articles as would give the readers an understandable insight into an art that is destined to play a leading part in the life of the immediately coming generations, changing very materially many details of human civilization.

The Annals, a publication which from time to time has devoted itself to the greatest problems and aspirations of mankind, never has served a more important cause than now, when it exerts its efforts to arouse American interest in aeronautics, and never has touched a field more certain to be fertile if cultivated by intelligence and energy. Thus tilled this field, first opened to the world by American genius, will yield results of incalculable moment.

No greater service could be done for this great nation by the American Academy of Political and Social Science than to induce a general study in this art and business, nor is there any other subject I can think of so certain to yield profit to the student.

Frank A. Tichenor.

Human Flight Throughout the Ages

By Adrian Van Muffling
Aeronautical Engineer

As we look back through history, particularly the history of mythology and religion, we observe that the attainment of flight has ever been uppermost among the aspirations of man. In most mythologies and religious systems, the supreme beings who ruled the universe were given their abode in a vague region far above the earth, and the ability to soar the atmosphere at will became therefore, an essential attribute of godliness. Man could walk the earth and swim its waters; but he could not fly. Next to immortality, flying was the one element that differentiated a Deity from common mortals.

The Philosophy of the Ancients

To scientists and philosophers, the problem whether man would ever succeed in elevating himself by his own effort, presented itself with peculiar fascination. That there were two things in nature which possessed an inherent power to rise into the atmosphere—birds and smoke—was a matter of everyday observation. And when men began to speculate about their own possibilities, there immediately arose two distinct schools of aeronautical philosophy, which developed parallel to each other down to the present day. They can be traced throughout the ages, and balloons and aeroplanes are, in essence, the practical result of the ancient smoke-flight and bird-flight theory.

It is interesting to note that the ancients, who conceived their gods essentially as human-like beings, approached the subject with less qualms than the philosophers of the Middle Ages, when consideration of what might or might not be displeasing to a wrathful Deity was often a deterrent to all but the most intrepid of thinkers. The Inquisition, indeed, considered attempts at aerial navigation as a form of sorcery, and many documents that would be of inestimable value to us today were destroyed by its orders, and their authors variously punished. The argument was: that if God had intended men to fly he would have endowed them with wings. Now, angels, who flew, were divine beings, while devils, who also flew, were most decidedly not. Not being divine, any man who ever succeeded in flying could not possibly be inspired by angels; consequently he *must* be in league with the devil and be aided by him. Which is all logical enough, and hundreds of clever men were sent to the rack or the stake as a result of such reasoning.

Ancient Stories of Flights

The earliest stories of flights of which there is a record belong clearly in the realm of pure legend. Such is the tale of Deadalus, who is said to have flown from Crete, where he had been imprisoned for revealing the secrets of the Labyrinth which he had constructed for the king. It has been pointed out that his was probably the first attempt to adopt sails in Greek waters, the use of which he had observed in Egypt, and the astonished Cretans mistook for wings the first sails which they beheld. His son Icarus suffered shipwreck—hence the legend of his fall with which every schoolboy is familiar. But a flying model "*in imitation of a dove made of wood . . . made to fly by regulated mechanics*," according to Aulus Gellius, is said to have been actually constructed some time before 360 B.C. Further references to flying are made by Plautus and Juvenal. And in 120 B.C. Samostathenes, in one of his satires, ridiculed the various means which had been suggested to enable men and ships to soar through the air; which shows that the idea of flying was fairly common at that early time.

That a certain Simon—often, but probably erroneously, identified with Simon Magus, the Apostate and opponent of St. Paul—succeeded in elevating himself into the air during the reign of Emperor Nero, is a story well authenticated by many writers of the time, both secular and apostolic. Tacitus specifies a "chariot of fire," and speaks of it as of a matter of common knowledge, and so does Macrobius. According to the early church writers, Simon undertook to prove a point in his argument against St. Paul, and ascended to some height to demonstrate that there was nothing supernatural in the story of the Transfiguration.

It is recorded that the ascension took place in the forum at Rome, and before a vast crowd which included the Apostle Peter. According to the legend the latter, incensed at such impiety, knelt down and prayed that Simon's temerity be punished, whereupon his chariot collapsed and he was killed by the fall. The story was repeated and improved upon by subsequent annalists and as usual did not lose in picturesqueness with each new version. If an account of the flight were not also given by sober, pagan historians, not influenced by religious bias, it might well be classed as legend, pure and simple.

If we weigh the probabilities, it seems not at all impossible, however, that a hot air balloon should have been constructed and actually made an ascension on that occasion. That smoke (*i.e.*, hot air) would rise was of course known. And the Romans, who were familiar with the art of weaving fine fabrics, and who carried on an extensive trade with the East, were certainly able to fashion a cloth or silk bag large enough to carry a man aloft. That an adventurous spirit should have been willing to make an actual test of his theories, and succeeded in rising high enough to be killed in the subsequent fall, is not unlikely. And it is also easily understandable that the early Christians, then just beginning to feel the first brunts of persecution, were thunderstruck at such audacity, and eagerly seized upon the occasion to turn it to their advantage, especially as it enabled them to demonstrate the power of their God by the spectacular public punishment of the most active opponent of their beliefs. There seems to be, therefore, no reason to believe that the story of the ascent of Simon, in a vehicle which probably resembled a modern balloon, is as mythical as it has been held to be by some subsequent writers.

THE MIDDLE AGES

During the Middle Ages scientific thought did not concern itself much with mechanical flight and mention of it is found only sporadically, such as the famous study of Roger Bacon on the flight of birds, written in 1256. This remarkable man clearly foresaw some of the difficulties that would have to be overcome, and in his prophetic vision he predicted not only the advent of the aeroplane but of the motor car as well, even going so far as to state unmistakably that the motive power would have to be derived from fire.

But it was not till the Renaissance brought along in its train a general quickening of scientific thought, that a serious study began to be made towards an understanding of the physical laws involved.

Early in the fifteenth century one Gianbattista Danti, professor of mathematics at Venice, constructed an apparatus evidently designed along the lines of a modern glider, with which he attempted a glide from the roof of a house in Perugia. According to the contemporary historian of the city:

> . . . *the day on which the nuptials of Paolo Baglioni were celebrated, and many principal lords had congregated to honor him, and lances were being broken in the street under his windows, he (Danti), unexpectedly and with a mass of wings which he had fashioned in proportion to the gravity of his body, removed himself from a tower nearby and, emitting a whistle most horrible to hear, flew happily over the big square filled with innumerable people.*

According to the narrator, the flight ended with the collapse of the left wing and a fall on the roof of a nearby church, although Danti had acquired proficiency by flying several times from the bluffs overlooking Lake Trasimeno. Another version of the same event describes the population as so incensed at his temerity in attempting to emulate the angels, that his apparatus was burned and the "sorcerer" exiled from the city.

LEONARDO DA VINCI'S CONTRIBUTION

It was probably this attempt which caused Leonardo da Vinci to give serious consideration to the problem of flight. As a trained engineer, however, he realized the necessity, before he attempted actual construction of a flying machine, for a thorough theoretical investigation, which he gave to the world in 1505 under the name of "Codex on the Flight of Birds." This curious booklet, full of descriptions and sketches of birds and various forms of mechanical wings, has been preserved, and, like some of his other notebooks, is full of most interesting material.

We know that he was first to realize the proper relationship between wing-position and center of gravity, and to point out the fallacy still held in popular belief that a low center of gravity must of necessity result in an inherently stable mechanism. He also established the theory of the inclined plane, later mathematically investigated by Newton, and that there must be a resistance offered to advancement by the air if sustentation of an object is to occur. His explanation of the motion of a bird's wing has not hitherto been seriously challenged, and our present knowledge on that point has not materially progressed beyond his.

According to his designs, he attempted to imitate the mechanical structure of a bird's wing, and his conception of the mechanical principles involved, and the means by which complex motions were to be attained were quite sound. Even his calculations were, in the main, correct; but he underestimated the power required to operate his wings, doubtlessly for lack of suitable apparatus for research.

FRANCISCO LANA'S STUDY

Francisco Lana, an Italian Jesuit in 1670, published a study on the physical properties of air, which was far in advance of the general knowledge of his time. He described a method to weigh a given quantity of air and first deduced the principle of lighter-than-air flying craft. He proposed a vessel suspended from four hollow copper globes, from which the air was to be evacuated by filling them with water, and then allowing the latter to run out through a pipe over 34 feet long—a perfectly sound principle, assuming that a vessel could be built strong enough to sustain the atmospheric pressure. His work concludes with the following prophetic words:

> *. . . and I can see no other difficulties that can be offered against this invention of mine excepting one which to me seems of more weight than all the others, and that is, that God shall never allow such a machine to be successful in practice, to prevent many consequences which would disturb civil and political intercourse among mankind. For who does not see that no city would be secure from surprises, as the ship could descend at any hour upon the very market place and from it issue men intent on ruin? And the same would happen in the courtyards of private houses and on the ships at sea, and even without descending could set the ships afire with fireworks, bullets and bombs, and not only ships, but houses, castles and cities, and those below would be without means of hurting those who dropped them from a great height.*

In common with many other enlightened thinkers, who aimed to replace the religious obscurantism of their time with useful knowledge, this man, who considered it unsportsmanlike to attack defenseless cities unable to fight back, was brought before the dreaded Inquisition and tried for sorcery, but—strangely enough—was acquitted.

FIRST OFFICIAL RECOGNITION

The first official recognition ever given by a government to the inventor of a flying machine was granted to one Bartholomy de Guzmao by the King of Portugal, and when we remember that even today some very absurd and unpractical ideas are often patented, we need not wonder that this first aeronautical patent was granted to what is perhaps the strangest and weirdest idea of them all. For this invention consisted of a ship built of iron and filled with chopped straw, over the deck of which there stretched a horizontal sail or canopy. Ascensional force was to be derived by three distinct methods: 1. A current of air was to be generated by bellows within the hold to blow upwards against the canopy; 2. Two large globes of lodestone or magnetic iron mounted on deck were to attract the metal body of the ship; 3. A number of pieces of amber suspended above the deck were to be heated by torches, and thus, by a well-known principle of static electricity, cause the straw in the hold to rise towards them. Three perfectly good ways, so to speak, of lifting oneself by pulling one's own bootstraps.

The original patent granted by John V, of Portugal, is interesting as a document showing that the value of aircraft to any nation possessing it was well realized; also as an example of the thoroughness with which exclusive privileges were granted and what dire penalties were incurred by the hapless infringer. It is of sufficient interest to quote it here in its entirety from a French translation. Note how well the advantages of flying which we enjoy today were understood at the time.

> *WE, THE KING (follow titles), make known that Father Bartholomeo Lourenzóu de Guzmao has addressed a petition wherein he declares that he has discovered an instrument designed to navigate in the airs in the same manner as on the ground and waters with far greater speed, covering a distance of 200 leagues a day. By this instrument one can deliver important messages to distant countries and troops almost at the same instant in which they are prepared, which interests us more than it does other sovereigns on account of the great extent of our possessions; one can avoid thereby the great distances of colonies, the news from which we always received too late; and furthermore, we can obtain all the necessities from said colonies much sooner and with greater speed; business men can exchange documents and capital with the same speed; all the beleaguered places can be assisted, with men as well as with provisions*

at any moment; those who desire can be taken out from them without interference from the enemy; and one can discover the lands adjoining the two poles of the earth.

The glory of this discovery shall revert to the Portugese nation, a discovery which foreign nations shall vainly attempt to imitate. The real longitudes of the entire world shall be known, for the errors on geographical maps are the cause of many shipwrecks; and furthermore, other advantages will be useful to the world and shall merit our royal attention; as in connection with this useful invention many problems will present themselves, many crimes will be committed, and other crimes facilitated through the certainty of evading justice by flying into other lands.

The above shall be avoided if the use of it be reserved to one person to whom all orders connected with said transport shall be given, and forbidding its employ to all other under penalty of punishment. Because it is just to remunerate the author of such an important invention, he has asked us for the exclusive privilege to operate said invention, so that no one else can avail himself of it, at any moment, in this Kingdom and its colonies, under no pretext whatsoever without the permission of the author or his heirs, under penalty of forfeiting all his possessions, one-half of which shall go to the author of the petition and the other half to the denouncer; and under all other penalties that it shall please us to apply, which shall be enforced as soon as it shall be known that any other person is building a similar instrument, even if he has not used the same, unless the culpable one has placed himself beyond jurisdiction by escape.

In consideration of his proposals I accord to the author of said petition the privilege of the execution of his invention to any other's exclusion, who cannot make use of said invention under the penalties as above specified. Only the author of the petition shall have the right to the use of this invention, as is requested in said petition.

This patent shall be privileged and effective in all its provision beyond the term of one year, in spite of the contrary provisions in Chapter IV, book II of our Ordinances.

There has been paid to the treasurer of the court, 2 francs 50 cent. as provided on page 160, Vol. I. Registered on page 149, Vol. I. Jose Maria de Faria wrote this patent the 19th day of April, 1709. Manoel de Castro Guimaraes has revised and rewritten it.

Recieved 2 fr. 50. (*Signed*) *THE KING.*

According to well-authenticated reports, Guzmao is actually known to have made a flight in a machine of his construction shortly after the granting of the patent, in the presence of the court and a vast crowd. Details are lacking, but an eyewitness relates about "*. . . a globe containing fire which he himself had lighted.*" It is evident that the original idea had been abandoned and that the inventor entrusted himself to a hot air balloon. But it was a deed miraculous for all that; even the good graces of the King were unable to save him from the charge of sorcery, and in 1717, Guzmao was brought before the dreaded Holy Tribunal. All papers relating to the invention were publicly burned, including accounts of the flight that were discovered while the unfortunate inventor was condemned to a dungeon, and not only his mistress but all the women he had ever been known to speak to were accused of witchery. Eventually he succeeded in escaping to Spanish territory where he died shortly afterward.

THE EIGHTEENTH CENTURY

The annals of the eighteenth century contain many records of further attempts and scientific discoveries, each of which added to the store of knowledge and made the chances of ultimate success more real.

The story of how the first balloon ascension was made by the brothers Montgolfier in 1783 is too familiar to be retold here in great detail. What is not so generally known, is that before the year was over the physicist Charles invented most of the improvements that are still in use today, such as the "net" which distributes the weight of the basket over the entire surface of the balloon, the safety valve, the rip cord to safeguard landings, and many others. Balloons were found to be very simple to construct and, keeping one for amusement being merely a matter of expense, ascensions became quite a popular sport among the French nobility prior to the Revolution. The spectacular new toy inflamed popular imagination and brought the usual exaggerations in its train. There arose a "cuisine au balloon," "voitures au balloon," and of course, "la mode au balloon," which was richly caricatured in the press of the time.

After that success the imagination of the inventors simply ran riot, and many of the devices of which records have been preserved are ludicrous in the extreme. Thus stock was sold for a dirigible balloon which was driven by a compressed air cannon. The body, suspended about thirty feet from the balloon proper, contained a compressor operated by a man-operated treadmill. A cannon would be loaded with a ball which was suspended by a chain from the balloon above; shooting the cannon would send the ball in any desired direction, and after the chain was taut its momentum was supposed to carry the whole contraption along for a while, during which time another similar ball was being loaded. A mattress on the bow of the boat was thoughtfully provided to receive the impact of the returning ball without damage. Another company was organized for the purpose of supplying tired Parisian business men with the bracing air of high altitudes without necessitating a trip to the mountains, simply by having a balloon, large enough to carry a house's population, ascend over the city every evening to be brought down again at dawn of the next day; all comforts of home being provided for, not forgetting a pipe organ for musical entertainment.

Aerial navigation having been accomplished in one form, interest in the development of flight by means of wings lagged for a time. Also, it had gradually been realized that man's muscular power is not sufficient to sustain him in the air. But after the steam engine was improved, thought began to be applied to the problem of harnessing the new force to aerial navigation. The design of an Englishman, Sir John Cayley, dated 1842, is the earliest of which we have detailed knowledge; and it shows how previous speculation had been well directed and how much had been learned by experience with gliders that this machine—which was never built, owing to the impossibility of obtaining an engine of sufficient power—was to embody the great majority of devices which made dynamic flight ultimately possible.

The Airplane

By Dr. Michael Watter, M.S.A.E.
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THE outstanding event of the beginning of the twentieth century is the fulfillment of the age-long objective of man to conquer the air. On December 17, 1903, an object created by man's genius and resembling nothing that we know in nature, an object much heavier than the air, carried a man in his conquering flight of few seconds. A few seconds in 1903—seconds of anguished uncertainty, continuous danger, and tiresome efforts. Twenty years after peaceful flights, of hours and hours duration—oceans spanned and the earth girded by glorious flights. Only twenty years after! The gigantic strides of the youthful science is a deserved reward to those brave men who dared and won success.

Because of the absence of laboratories in the early days of flying, the theory of flight had to be studied by actual experiments. It was only later when scientists and engineers devoted their attention to this new method of locomotion that the practical results found theoretical explanation and technical coördination. Today, aeronautics is a well-defined and extensive branch of pure and applied sciences. The airplane is strictly a technical product, created according to usual procedures of engineering. It is designed, calculated and manufactured, and its strength, capacity and performance are controllable and known before the production is even started.

There are five distinct groups of principal parts constituting an airplane: wings, stabilizing and controlling surfaces, power group, body, and landing gear. The wings sustain the craft in flight. Stabilizing and controlling surfaces are necessary to render the plane stable and steerable. The power group provides the motion of the craft in the air, which is the most important condition of sustention. The body houses the crew, passengers, and luggage. The landing gear serves in alighting and landing.

The aim of this article is to review these parts and in the light of our present knowledge to explain their working, history and probable future modifications.

Wings

A wing is a structure having a lateral dimension (span) from about four to twelve times greater than longitudinal one, (chord). The chord section of a wing resembles somewhat the wing of a bird. The form of this section, the airfoil, is the governing factor in the characteristics of a wing; it was evolved, in the beginning of flying, through methodical experimentation, but found its general explanation only in 1906. Professor Joukowsky of Russia, by a brilliant mathematical theorem, proved that wing profiles when invested by an air stream are subjected to an air force perpendicular to the original direction of the wind. This, however, is true only in what is known as the ideal fluid and for such wings whose span would be infinitely larger than the chord.

In actual practice these conditions are not fulfilled, and as a result the air force is inclined slightly backward so that we must consider two forces: one perpendicular to the direction of the air stream, and called the "lift," and a second along the direction of relative wind, called the "drag." The lift is the sustaining force which enables us to fly, while the drag must be overcome by the thrust of the propeller.

In order to understand the lifting action of a wing let us imagine at the leading edge of a wing two particles of air. Let us suppose that one has to travel along the upper camber of the profile, while the second must follow the under camber; since the air cannot break, the upper particle will be forced to travel with a speed higher than that of the lower one. But it is a known fact in hydrodynamics that whenever the speed is high the pressure is low, and, therefore, the pressure on the upper side of the wing is much lower than on the under side. As a result of this difference of pressure there is a force acting on the wing as long as there is a relative motion of the wing and the air. This explains why an airplane must be in constant motion, and shows the importance of what is called the loss of speed.

The wing theory constitutes a very important branch of aerodynamics, and, today, besides the Kutta-Joukowsky theory, we have further developments of this question. It is possible at present not only to evaluate very accurately the characteristics of a given airfoil, but also to design airfoils with desired characteristics. The experimental research carried out in various wind tunnels of the world has enriched our technical library with records on numerous and varied airfoils, and in designing a new airplane it is customary to use these records instead of attempting to design a new airfoil. Only in special cases, as in high-speed racing planes, where every bit of refinement is required for a successful design, does a manufacturing company go to the expense of designing and experimenting with new airfoils.

The evolution in airfoils so far was as follows: the first machine did not have airfoils, properly speaking, but used flat and arched surfaces. The next step was toward thin airfoils, which seemed to be efficient. With the aid of wind tunnel research, and mathematical investigations, it was found that semi-thick and thick airfoils compare very favorably with the thin ones. In an orthodox design of today, almost invariably use is made of semi-thick airfoils, ranging in thickness from eight to twelve per cent of the chord. Planes of the future are pictured today by engineers as huge monoplanes with thick wing (20–25 per cent of the chord) housing motors, crew, passengers, etc., entirely within it.

The monoplane versus biplane is a highly debated subject, and each arrangement has its advocates. In my opinion, however, no fixed solution is possible, as it is merely a matter of conditions and service requirements that should govern an unprejudiced choice of the wing arrangement. Strength of the design is a criterion which often limits and directs the type of design.

One of the important features of airfoils is the variation of the lifting force, with change of the attitude of the airfoil in reference to the direction of flight. When the chord of airfoil makes a small angle with the relative wind, the lifting force and drag are small, and with increase of angle are gradually increasing; at an angle of attack of about fourteen to eighteen degrees there is a sudden drop in lifting force, and this point determines the landing speed of the craft. Since it is evident that the lower the landing speed the safer it is to fly an airplane, the efforts of engineers and inventors were long directed to increase the lifting power of airfoils, without appreciably affecting the characteristics of profile at small angles of attack which govern the high speed of the craft.

There were various ingenious devices tried out, but the most promising one seems to be what is known as a slotted wing in combination with a flap. A slotted wing represents an airfoil built of one or more smaller airfoil—like portions which when closed form one large airfoil. By opening them the lifting power of the original airfoil can be increased considerably, thus decreasing the landing speed of the airplane.

The flap is a movable portion of the wing located at the trailing edge, which when lowered increases the maximum lift coefficient of the original profile. Since these devices result in mechanical complications, it was found that a single slot in combination with a flap is mechanically the most practical arrangement.

Planes having this arrangement are being tested out in England and Germany, in which two countries the idea of a slotted wing was first originated. It seems that the improvement of the planes in the immediate future lies in the perfection of the slotted wing.

STABILIZING AND CONTROLLING SURFACES

The stalling speed is a danger point of an airplane's flight because should this point be passed the plane will lose its flying speed with a resulting loss in lifting ability and control. Consequently the plane must be designed in such a way that when the angle of attack is being increased the airplane should have an inherent tendency to lower its nose (diving moment) and vice versa; a decrease in angle of attack should result in a tendency to raise the nose (stalling moment), thus preventing a dive.

A wing by itself, like every other streamlined body, does not follow this law. It has an unstable tendency to continue on whatever motion begun until a disastrous end. In order to counteract this tendency an airplane is fitted with an auxiliary wing, located at the rear of the body, for the purpose of stabilizing the craft. A flap action is utilized in this auxiliary surface to control the plane, and the movable portion is called the elevator, the whole combination being called the horizontal tail.

The horizontal tail is either supported by the rear end of the fuselage, or is erected on special booms. Control is achieved by means of cables attached to controlling horns fastened to the surfaces. The cables lead to the pilot's control which is either a stick or wheel type.

The function of the horizontal tail is to assure longitudinal stability and control of the airplane. There are two other kinds of possible deviations of the craft during flight, namely the directional (yawing), and rolling. Directional stability is achieved by means of vertical surfaces, the rear part of which is movable, similar to the elevators. This part is called the rudder and is used to steer the craft right and left, just as in a motor boat.

The rolling or rotation of the plane about its longitudinal axis is corrected by means of increasing the lift on one side of the wing and decreasing it on the opposite side. The standard arrangement used for this purpose at present is to have on each side of the wing a flap (the aileron), extending only a part of the semi-span and connected to the pilot's control in such a manner that when one side is depressed the opposite is raised.

All these surfaces secure the control of the plane in the air, and their arrangement and sizes must be ample but not excessive.

Wind tunnel research plays a very important part in securing reliable information on flying properties of the craft. With the theoretical methods available at present, an engineer is able to investigate and design an airplane so that a desired degree of stability and controllability is secured.

The tail surfaces, in the early days, were flat surfaces located sometimes as at present behind the main areas, sometimes in front (the so-called Canard type). With the recognition of useful properties of airfoils the use of cambered sections in tail surfaces is practically standardized.

The adoption of the airfoil section is very important because it increased the range and power of control. With the accumulation of theoretical investigations and wind tunnel experiments, it becomes apparent that the old locations and sizes of stabilizing and controlling surfaces are almost invariably too large, and the new designs already show a closer study of this problem. As a result the length of the body or booms are shortened, weight of the structure decreased, and a saving in cost effected.

The improvements in the profile of the tail surfaces was followed by the improvement in the types of balance. The purpose of balancing the controlling surfaces is to decrease the force required to operate the controls. In future giant planes the controls will probably be operated by servo-motors or auxiliary surfaces. The slotted wing arrangement also finds its utilization in controlling surfaces at the airplane.

POWER PLANT

The sustaintion of an airplane is secured by motion of the wings relative to the surrounding air. To achieve this it is necessary to overcome the drag of the wings and also the parasite resistance. Parasite resistance is called the total resistance offered by the body, landing gear, tail surfaces, etc., to the motion through the air..

The propeller creates the necessary thrust, and as long as the airplane is in the state of level unaccelerated motion the propeller thrust is equal to the total drag of the machine. The propeller can be compared to an ordinary screw, or to two airfoils mounted on a rotating shaft and following a circular path. The resulting force on each blade can be resolved into a force along the direction of the motion—the thrust—and another in the plane of rotation of the propeller—the torque. The torque movement of the propeller is equal to the torque of the engine obtainable on the crankshaft.

The propeller blades are shaped, taking into account the fact that each portion of the blade meets the airstream at different angles and at different speeds. Ordinary propellers are made of laminated wood, but recently developed metal propellers showed higher efficiency and good weatherproof qualities, and the metal propeller will unquestionably supplant the wooden one. There were invented propelling units of most varied nature, but if one thinks of the high efficiency obtainable with an ordinary propeller, it is almost certain that this simple device will be the winner for the range of present speeds. The efficiency of an ordinary propeller (for a comparatively slow airplane) is around eighty per cent, while the high-speed propellers have an efficiency of around eighty-five per cent.

The comparative inefficiency of the present power plant lies mainly with the engine which is a perfected type of four-cycle explosion motor, using gasoline as fuel. There are water and air-cooled types, but the general trend is noticeably toward the latter. This fact is explained by the elimination of the water system (a frequent cause of trouble in a water-cooled engine), which saves in weight, and retains practically the same high speed of the airplane. The added reliability and decreased weight are very important factors, and as a result the air-cooled engines are rapidly gaining in favor among aeronautical engineers.

Low weight is a very important requirement of an airplane engine, and combined with requirements of simplicity and reliability an airplane engine of today is a remarkable achievement of engineering. Light alloys and high-grade steels are used exclusively in aviation engines of today.

The operation of airplanes at high altitudes results in the necessity of employing superchargers, which feed the engine with the air at sea-level pressure. The use of superchargers, with a comparatively small increase in first cost, results in an increased efficiency of operation, and even engines which are not specially built for high altitude work at present are equipped with superchargers.

The desire to improve the efficiency, and increase the power per weight, results in the research on two-cycle explosion and Diesel engines, and also in study of the possibilities of creating a gas turbine. The gas turbine will have an important advantage of smoothness of operation and uniformity of action. Jet propulsion (that is, the employ of reaction of escape of exploded gases directly, without use of propellers) is another feature studied by engineers, but it seems that the real advantages of such a power plant could be gained only at speeds much above the ones obtainable at the present time.

BODY

The body or fuselage houses pilots, crew, passengers and luggage. The airplanes of the early days did not have what at present is known as the body; the pilot simply sat on a small seat with landscape visible from beneath and on all sides. The old type of fuselage structure with its many struts, wires and fittings, the pilot himself exposed to the wind, represented considerable resistance and discomfort. The realization of this led to covering the fuselage with fabric. The enclosed fuselage has a lower resistance and also presents a comfortable housing space for the pilot.

Large commercial airliners of today have spacious, noiseless, well-ventilated, heated and comfortably furnished cabins. The pilots' compartment has steering mechanisms and instruments for flying and navigating. There are usually special luggage spaces and lavatories. In the case of a military plane, the body houses the machine guns, bombs, photographic cameras, etc., as the purpose of the craft may require.

Single-engined planes have the engine in the front part of the fuselage, and fuel stored as close as possible to the center of gravity of the airplane. Multimotored planes may have a central motor room in the fuselage, but preferably the motors are located on the wings with fuel and oil stored in special tanks, the whole unit streamlined to minimize the air resistance.

In a plane of such size that passengers could be housed inside of the wing, the fuselage will disappear and instead there will be booms or outriggers supporting the tail surfaces.

LANDING GEAR

Since an airplane cannot fly below a certain speed, in order to begin its flight a machine must gather this speed by running along the ground (or water, in the case of water craft). On the other hand, at the instant of contact with the ground an airplane still has its flying speed, and before coming to a full stop it must have some means of rolling or sliding along the ground. For this purpose airplanes are equipped with landing gear or chassis, which, depending on the type of the craft, are either land or water types.

A land-type airplane, called a landplane, may be required to operate from the ground or snow, and in such cases is fitted with wheels or skis.

Wheel-type landing gears are of most varied design, but can be segregated into two distinct groups—axle and split-axle. The distinction of these two types lies in the presence of a continuous axle in the first group; while in the second the axle is bent up so that there is no continuous member joining the two wheels. The advantage claimed for this type is the reduction of hazard of nosing over, should the plane be forced to land in case of emergency on unsuited ground. It is also better because it minimizes the possibility of striking objects on the ground while taking off or alighting. Skis made out of wood or metal are used in operating from the snow-covered ground in northern countries.

Landing and running over the ground imposes a rather severe shock on the chassis, and in order not to transmit it into the structure, landing gears are equipped with shock-absorbing devices. The first and the lightest was shock-absorber cord in tension. At present there is a variety of shock-absorbing devices such as: rubber disks in compression, rubber balls and oleo, steel springs and oleo, etc. The most popular seems to be the oleo type operating on the principle of the hydraulic braking effect of special oil while passing through small orifices, a comparatively simple detail in a small airplane. When one thinks of giant airplanes of the future, the landing gear must present most intricate problems.

The water-type landing gear is of two types—single and twin float. In the first case there is a single float under the main body of the airplane, and the lateral stability of the craft at rest or at low speeds is obtained by means of auxiliary wing tip floats. The buoyancy of this float is sufficient to counteract, with a margin, the offsetting moment of the inclined craft. A twin float type does not require the presence of wing tip floats, because its two floats are located very similarly to the two wheels of a landplane.

This type of water craft is called seaplane. Besides this there is a third variety of water-operating airplanes which are called flying boats. As the name implies, these are especially built airplanes in which the body is built like a boat, so that it can take off and alight on water.

CONCLUSION

The few pages allotted to this article are hardly sufficient even for an extremely abbreviated description of the workings and principles of this modern achievement. The airplane is a glorification of engineering because it marks the conquest over the most extensive and one of the most powerful elements—the air.

If economy is a purpose in other branches of engineering, it is a necessity in aeronautics. The exacting requirements of aeronautical engineering are already felt throughout the technical world; better material, lighter material, saving in sizes, closer and better standards. This effect is also felt morally. The intricate problems of design require a thorough knowledge in different branches of engineering, and as a result it leads to a higher standard of engineering education.

The usual antagonism of science and

practice is disappearing in aeronautics because of closer scrutiny of materials, and high standards of workmanship made it possible to prove to most practical men that "figures don't lie."

The airplane of today is a reliable means of transportation which may be used without hesitation. The heroic period has passed, and daring and trying is supplanted by accurate engineering calculations and methodical research.

The First Flight

By Jessie E. Horsfall

Editor, *Aero Digest*

THE flights of their glider in 1902 convinced Wilbur and Orville Wright of the efficiency of their system of maintaining equilibrium, and the accuracy of the laboratory work upon which the design of their glider was based. They then felt they were prepared to calculate in advance the performance of machines with a degree of accuracy that had never been possible with the data and tables used by their predecessors. Before leaving their camp at Kitty Hawk, North Carolina, in 1902, they were at work on the general design of a new machine which they proposed to operate with engine-driven propellers.

The First Engine

Upon their return to Dayton they wrote to a number of automobile and engine builders, stating the purpose for which they desired an engine, and asking whether one could be furnished that would develop eight-brake horsepower, with a weight complete not exceeding 200 pounds. Most of the companies answered that they were too busy with their regular business to undertake the building of such an engine, but one company replied that they had engines which weighed only 135 pounds and rated at 8 h. p., according to the French system of ratings. It had but a single cylinder of four-inch bore and five-inch stroke, and its power probably was much overrated. Unless it would develop a full eight-brake horsepower it would not serve its purpose.

Finally the Wright brothers decided to build an engine themselves. They designed an engine of four cylinders with four-inch bore and stroke, weighing not over 200 pounds including all accessories. Up to that time their only experience in the building of gasoline engines had been in the construction of an air-cooled engine, five-inch bore and seven-inch stroke, used to run the machinery of their small workshop. To be certain that four cylinders of the size they had decided upon would develop the necessary 8 h. p., they first fitted them into a temporary frame of simple and cheap construction. Six weeks from the time the design was started they had the engine on the block, testing its power. There was no provision for lubricating either cylinders or bearings while this engine was running, and for that reason it was not possible to run it more than a minute or two at a time. In these short tests the engine developed about 9 h. p. They were then satisfied that with proper lubrication and better adjustments a little more power could be expected. The completion of the engine was therefore proceeded with at once.

Designing the Machine

While their assistant, Mr. C. E. Taylor, was engaged with this work, the Wright brothers were completing the design of the machine itself. The preliminary tests of the engine having indicated that more than 8 h. p. would be secured, they felt free to add enough weight to build a more substantial machine than originally contemplated.

Their tables of air pressures and experience in flying with the 1902 glider enabled them to calculate the thrust necessary to sustain the machine in flight. But to design a propeller that would give this thrust, with the power at their command, was a matter not as yet seriously considered. Data on air propellers were not available, but they understood that an efficiency of fifty per cent with marine propellers was not unusual and that it would be necessary only to learn the theory of the operation of marine propellers from books on marine engineering, substituting air pressures for water pressures. Several such books were secured from the Dayton Public Library. All the formulae on propellers contained in these books were of an empirical nature, and there was no way of adapting them to calculations of aerial propellers. As they could neither afford the time nor expense of a long series of experiments to find by trial a propeller suitable for their machine, they decided to rely more on theory than was the practice of marine engineers.

They agreed that a propeller was simply an aeroplane traveling in a spiral course. As they could calculate the effect of an aeroplane traveling in a straight course, they felt that to calculate the effect of one traveling in a spiral course would not be difficult.

On further consideration they found it hard to find even a point from which to make a start, for nothing about a propeller, or the medium in which it acts, stands still for a moment. The thrust depends upon the speed and the angle at which the blade strikes the air; the angle at which the blade strikes the air depends upon the speed at which the propeller is turning, the speed the machine is traveling forward, and the speed at which the air is slipping backward; the slip of the air backward depends upon the thrust exerted by the propeller and the amount of air acted upon. When any one of these changes it alters all the rest, as they are all interdependent. But these are only a few of the many factors that must be considered and determined in calculating and designing propellers. Their minds became so obsessed with it that they could do little other work. They engaged in innumerable discussions, and often after an hour or so of heated argument would discover that they were as far from agreement as when they started, but that both had changed to the other's original position in the discussion. After several months of this study and discussion they were able to follow the various reactions in their intricate relations long enough to begin to understand them. They realized that the thrust, generated by a propeller when not moving through the air, was no indication of the thrust when moving forward. Their only recourse to really test the efficiency of propellers would be to actually try them on the machine.

For two reasons they decided to use two propellers. In the first place by the use of two propellers they could secure a reaction against a greater quantity of air, and at the same time use a larger pitch angle than was possible with one propeller; and in the second place by having the propellers turn in opposite directions the gyroscopic action and torque of one would neutralize that of the other. The method adopted, of driving the propellers in opposite directions by means of chains, is now too well known to need description here. They placed the engine to one side of the pilot so in case of a plunge headfirst, the engine could not fall upon him. In their gliding experiments they had had a number of experiences in which they had landed upon one wing, but the crushing of the wing had absorbed the shock, so that they were not uneasy about the motor in case of a landing of that kind. To provide against the machine rolling over forward in landing, they designed skids like sled runners, extending out in front of the main surfaces. Otherwise the general construction and operation of the machine was to be similar to that of the 1902 glider.

When the engine was completed and tested, they found that it would develop 16 h. p. for a few seconds, but that the power rapidly dropped until, at the end of a minute, it was only 12 h. p. Ignorant of what a motor of this size ought to develop, they were greatly pleased with its performance. With 12 h. p. at their command, they considered that they could permit the weight of the machine with operator to rise 750 to 800 pounds and still have as much surplus power as they had originally allowed for in the first estimate of 550 pounds.

Before leaving for their camp at Kitty Hawk they tested the chain drive for the propellers in their shop at Dayton and found it satisfactory. They found, however, that their first propeller shafts, which were constructed of heavy gauge steel tubing, were not strong enough to stand the shocks received from a gasoline engine with a light fly wheel, although they would have been able to transmit three or four times the power uniformly applied. They therefore built a new set of shafts of heavier tubing, which were tested and thought to be strong enough.

They left Dayton, September 23, arriving at the camp at Kill Devil Hill on Friday, the 25th. Provisions and tools had been shipped by freight several weeks in advance. The building, erected in 1901 and enlarged in 1902, was found to have been blown by a storm from its foundation posts a few months previously. While they were awaiting the arrival of the shipment of machinery and parts from Dayton, they put the old building in repair and erected a new building to serve as a workshop for assembling and housing a new machine.

Just as the building was being completed, the parts and material for the machine arrived. The next three weeks were spent in setting the motor machine together. On days with more favorable winds they gained additional experience in handling a flyer by gliding with the 1902 machine.

MATHEMATICAL BASES

While Mr. Chanute was with them a great deal of time was spent in discussion of the mathematical calculations upon which the Wrights had based their machine. Mr. Chanute informed them that, in designing machinery, twenty per cent was usually allowed for the loss in the transmission of power. As they had allowed only five per cent, a figure arrived at by some crude measurements of the friction of one of the chains when carrying only a very light load, they were much alarmed. More than the whole surplus in power allowed in their calculations would, according to Mr. Chanute's estimate, be consumed in friction in the driving chains. After Mr. Chanute's departure, they suspended one of the drive chains over a sprocket, and on it fixed a weight approximately equal to the pull that would be exerted on the chains when driving the propellers. By measuring the extra amount of weight needed on one side to lift the weight on the other they calculated the loss in transmission. This indicated that the loss of power from this source would be only five per cent, as originally estimated. But while they could see no serious error in this method of determining the loss, they were uneasy until they had a chance to run the propellers with the engine to see whether they could get the estimated number of turns.

TESTS AND DIFFICULTIES

The first run of the motor on the machine developed a flaw in one of the propeller shafts. The shafts were sent at once to Dayton for repair, and were not received again until November 20. They put them in the machine and made another test. A new trouble developed. The sprockets, which were screwed on the shafts and locked with nuts of opposite thread, persisted in coming loose. They heated the shafts and sprockets, melted hard tire cement into the threads and screwed them together again. This trouble was over. The sprockets stayed fast.

Just as the machine was ready for test, bad weather set in. It had been disagreeably cold for several weeks, so cold that some days they could scarcely work on the machine. But it now began to rain and snow, and from the north a wind of 25 to 30 miles blew for several days. While they were being delayed by the weather, they arranged a mechanism to measure the duration of flight from the time the machine started to move forward, to the time it stopped; the distance traveled through the air in that time; and the number of revolutions made by the propellers. The watch, anemometer, and revolution counter were all automatically started and stopped simultaneously. From data thus obtained they expected to prove or disprove the accuracy of their propeller calculations.

On November 28, while giving the motor a run indoors, one of the tubular shafts cracked! Solid tool-steel shafts of smaller diameter than the tubes previously used were decided upon. They would allow a certain amount of spring. The tubular shafts were many times stronger than would have been necessary to transmit the power of the motor if the strains upon them had been uniform. But the large hollow shafts had no spring in them to absorb the unequal strains.

Wilbur remained in camp while Orville went to get the new shafts. Orville did not get back to camp again till Friday, the 11th of December. Saturday afternoon the machine was again ready for trial, but the wind was so light that a start could not have been made from level ground with the run of only 60 feet permitted by their monorail track; nor was there enough time before dark to take the machine to one of the hills, where, by placing the track on a steep incline, sufficient speed could be secured for starting in calm air.

Monday, December 14, was a beautiful day, but there was not enough wind to enable a start to be made from the level ground about camp. They therefore decided to attempt a flight from the side of the Kill Devil Hill. Having arranged with the members of the Kill Devil Life Saving Station, located a little over a mile from camp, to inform them when the first trial of the machine was ready to be made, they were soon joined by J. T. Daniels, Robert Westcott, Thomas Beachem, W. S. Dough, and Uncle Benny O'Neal, of the station, who helped get the machine to the Hill, a quarter mile away. A track was laid 150 feet up the side of the hill on a nine-degree slope. With the slope of the track, the thrust of the propellers, and the machine starting directly into the wind, they did not anticipate any trouble in getting up flying speed on the 60-foot monorail track. But they did not feel certain the operator could keep the machine balanced on the track.

THE FIRST TRIAL

When the machine had been fastened with a wire to the track so that it could not start until released by the operator, and the engine had been run to make sure it was in condition, the brothers tossed up a coin to see who would make the first trial. Wilbur won. Orville took a position at one of the wings, intending to help balance the machine as it ran down the track. When the restraining wire was slipped the machine started off so quickly he could stay with it only a few feet. After a 35- to 40-foot run, it lifted from the rail. But it was allowed to turn up too much. It climbed a few feet, stalled, and then settled to the ground near the foot of the hill, 105 feet below. The stop watch showed that it had been in the air just three and one-half seconds. In landing the left wing touched first. The machine swung around, dug the skids into the sand and broke one of them. Several other parts were also broken, but the damage to the machine was not serious. The test had shown nothing as to whether the power of the motor was sufficient to keep the machine up, since the landing was made many feet below the starting point, but the experiment showed that the method adopted for launching the machine was a practical one. On the whole they were much pleased.

Two days were consumed in making repairs, and the machine was not ready again till late in the afternoon of the 16th. During the night a strong cold wind blew from the north. When they arose on the morning of the 17th the puddles of water, which had been standing about camp since the recent rains, were covered with ice. The wind had a velocity of 22 to 27 miles an hour. They thought it would die down before long, and so remained indoors the early part of the morning. But when 10 o'clock arrived and the wind was as brisk as ever, they decided they had better get the machine out and attempt a flight. They hung out the signal for the men of the Life Saving Station. They thought that by facing the flyer into a strong wind, there ought to be no trouble in launching it from the level ground about camp. They realized the difficulties in flying in so high a wind, but estimated the added dangers in flight would be partly compensated for by the slower speed in landing.

THE SECOND ATTEMPT

A track was laid on a smooth stretch of ground about 100 feet north of the new building. The biting cold wind made work difficult, and they had to warm up frequently in their living room, where there was a good fire in an improvised stove made of a large carbide can. By the time all was ready, J. T. Daniels, W. S. Dough and A. D. Etheridge, members of the Kill Devil Life Saving Station, W. C. Brinkley of Matero, and Johnny Moore, a boy from Nags Head, had arrived.

They had a hand anemometer with which they measured the velocity of the wind. Measurements made just before the first flight showed velocities of 24 to 27 miles per hour. The records of the Government Weather Bureau at Kitty Hawk gave the velocity of wind between the hours of 10.30 and 12 o'clock, the time during which the four flights were made, as averaging 27 miles at the time of the first flight and 24 miles at the time of the last.

Wilbur, having used his turn in the unsuccessful attempt on the 14th, the right to the next trial now belonged to Orville. After running the engine a few minutes, to heat it up, he released the wire that held the machine to the track, and the machine started forward into the wind. Wilbur ran at the side of the machine, holding the wing to balance it on the track. Unlike the start on the 14th, made in a calm, the machine now facing a 27-mile wind started very slowly. Wilbur was able to stay with it until it lifted from the track after a 40-foot run. One of the life-saving men snapped the camera for them, taking a picture just as the machine had reached the end of the track and had risen to a height of about one foot. The slow, forward speed of the machine is clearly shown by Wilbur's attitude. He stayed along beside the machine without any effort.

The course of the flight up and down was exceedingly erratic, partly due to the irregularity of the air, and partly to lack of experience in handling this machine. The control of the front elevator was difficult on account of its being balanced too near the center. This gave it a tendency to turn itself when started, so that it turned too far on one side, and then too far on the other. As a result the machine would rise suddenly to about 10 feet, and then as suddenly dart for the ground. A sudden dart when a little over a hundred feet from the end of the track, or a little over 120 feet from the point at which it rose into the air, ended the flight. As the velocity of wind was over 35 feet per second and the speed of the machine over the ground against this wind 10 feet per second, the speed of the machine relative to the air was over 45 feet per second, and the length of the flight was equivalent to a flight of 540 feet made in calm air. This flight lasted only twelve seconds but it was, nevertheless, the first in the history of the world in which a machine, carrying a man, had raised itself by its own power into the air in full flight, had sailed forward without reduction of speed, and had finally landed at a point as high as that from which it started.

Aeronautical Education

By Alexander Klemin

Daniel Guggenheim School of Aeronautics, College of Engineering, New York University

THE pioneers of the early days of aviation were men of original and adventurous mind, who owed little to formal education of university character. The Wright brothers themselves, while well-educated men, who conducted their first experiments in a most systematic and scientific manner, certainly did not owe their inspiration to the professors of a university or a technical school. In fact official science was inclined to scoff at the possibility of heavier-than-air flight. All the greater credit is due to Langley for his pioneer work, since he certainly belonged to the ranks of "official scientists." But when once the radical departure from accepted ideas had been made, and two men of genius had flown at Kitty Hawk, scientific experimentation did not fail to step in. In fact it may safely be said that in the development of no other branch of engineering has scientific work been so intensive or so rapid as in aeronautics. Particularly under the impetus of the World War, many laboratories set to work strenuously to develop the science of aerodynamics, to refine the structure of aircraft, and to investigate a dozen closely allied fields. While government laboratories both in Europe and the United States bore the brunt of the experimental work insofar as it related to improved construction, the universities played their share in the development of the more general ideas. The remarkable work of Göttingen University, in the development of the vortex theory, may be cited as a brilliant example. The universities also recognized at an early date that systematic instruction in aeronautics was one of their proper functions.

Thus even before the great war there were centers of instruction and research as at Göttingen in Germany, at the Petrograd Institute of Technology in Russia, at the University of Paris in France.

UNIVERSITY TRAINING

It may be interesting to outline briefly what the university has to do in the education of the aerodynamicist and the aeronautical engineer, and of the future industrial operator of aircraft.

First it must give him the fundamentals of physics, mathematics, mechanics, and general engineering which must serve as the granite base for all specialized superstructure. In mathematics and mechanics, the basic knowledge required is considerably greater than in other branches of engineering. The design of aircraft is in part a matter of artistic feeling, inspiration, or what you will. But it is also a matter of analysis and calculation. The construction of a machine tool is based on certain mechanical instincts well implanted in the mind of man. The dynamics and stability of an aircraft in its evolutions in three dimensions is more a matter of careful analysis, in which mathematics must help.

SCIENCE OF AERODYNAMICS

The basic science is, of course, aerodynamics, the science of air flow and forces. Here the university or technical school must provide the student with practice in the wind tunnel. This is a huge Venturi, at the throat of which small models are placed; on these a stream of air impinges, produced by the blast of a large propeller. By an elementary concept of relativity, the forces on a body past which air flows at a certain velocity, are the same as if the body were moved at the same velocity through stationary air. Therefore if the forces on the stationary model are accurately measured, prediction is possible of the forces which will be present on the full sized airplane. Hence the stability and safety of the airplane may be studied. The tunnel may also be made to give a measure of the efficiency of the craft, the ratio of the sustaining force to the retarding force which the energy of the propeller has to overcome. No student is competent to understand aerodynamics, until he has himself performed certain basic experiments in the wind tunnel.

STRUCTURE OF AIRCRAFT

The structure of aircraft is another important item in the student's training. The airplane must be not only strong, but light, differing in this respect from many other forms of structure, where strength is essential but weight is a comparatively secondary consideration. The student analyzes carefully the stresses and strains which come on aircraft by refined methods, which at the moment lead structural theory in every field. Then he supplements his theory by tests to destruction of various component parts such as wing ribs, struts, wires, and even whole groups of the airplane, such as the tail surfaces or fuselage.

The aircraft power plant is studied carefully, but here the work is analogous to the general study of the internal combustion engine and presents few novelties in method.

We shall not go into further detail with regard to other branches of instruction. While the subject matter of the teaching is constantly changing—progress in the art is so rapid, that textbooks are out of date as soon as published and the work of the instructors is greatly increased thereby—the general syllabus of instruction in aeronautical engineering has been in a measure standardized, and the syllabuses of the great American schools of aeronautics have all a close family resemblance. They include specifically, aerodynamics theoretical and experimental, theory of airplane design, practical airplane design, airship theory, airship design, propeller theory and design, aircraft engine theory and design, structural analysis, and similar topics. In the various schools more emphasis is placed on different topics, but the general method of approach never varies greatly.

The courses in aeronautics are generally given as the fourth year of a student's general course in mechanical engineering as at New York University, in naval architecture as at Michigan, as purely graduate work as in some of the western universities, or in both undergraduate and graduate years as at New York University and Massachusetts Institute of Technology. It is inconceivable that aeronautical engineering should ever be taught as a course in itself. It should always follow a solid education in general engineering. It is one of the difficulties of an instructor that he must frequently interview young men who wish to be aeronautical engineers but call for immediate specialization without going through the basic and essential training.

RECOMMENDATIONS

The writer of this short article believes that university instruction, even in engineering, should not strive to be ultra-practical. In the career of the average engineer, the university is apt to be the one stage where he really digs into fundamental principles. His practical experience will teach him quickly enough, but in very few factories will he have time to absorb principles. But while the university may rightly stress principles, there is no reason why the generous summer vacations should not be utilized for the practical work. Students should if possible learn to fly. The Air Units of the Army, and the Naval Air Service Reserve furnish excellent opportunities in this regard. Or they may enter the shops of a constructor, working as a mechanic's helper at an average wage of fifty cents an hour. The writer makes every endeavor in his personal contacts with students to encourage them in securing such summer work, and he is confident that his colleagues in other schools adopt a similar attitude. At New York University, the coöperative course, in which the student spends eight months in practical work and then an alternate eight months at college, has been developed into a highly successful system.

Flying and practical experience with aircraft operators, as distinct from aircraft constructors, is particularly valuable to those young men who wish to pursue one of many phases of industrial operation, such as air transport, aerial photography, etc.

Air transport in particular may offer great opportunities to the college graduate. To meet the needs of the future air transport operator, the syllabuses of instruction are being supplemented with courses in the design of airways and airports, in the analysis of operational costs, in the study of such important aids to navigation as aircraft radio and aircraft lighting.

Grants to Aeronautical Education

Aeronautical education in the United States has lately received a tremendous impetus by the efforts of two men, Mr. Daniel Guggenheim and his son, Mr. Harry F. Guggenheim. It is the good fortune of American universities that they can at psychological moments, and when their needs are really justified, count on the generosity and farsightedness of our great business leaders. Certainly the work of these two men in the field of aeronautical education has been of incalculable value. In the summer of 1925, after very careful investigation by Harry Guggenheim, Mr. Daniel Guggenheim established a school of aeronautics at New York University with a fund of $500,000. This was followed shortly afterward by the establishment of the Daniel Guggenheim Fund for the Promotion of Aeronautics, with provision for the supply of $2,500,000 when needed. Harry Guggenheim was elected the President of this Fund, Admiral H. I. Cone, the Vice-President, with a board of distinguished trustees. The Fund directed its energies from the very first towards education. The following grants to education have been made thus far: to Leland Stanford University in California, a fund amounting to the income on $300,000 for the financing of experiments and study in aviation and aeronautics; to the California Institute of Technology, $300,000 for the erection of a permanent building for the study of aeronautics and for experimentation; to the University of Michigan, $78,000 has been granted for the completion of laboratories and extension of instruction; to the Massachusetts Institute of Technology, $225,000 for the construction of a permanent building.

The effort has thus been wise, generous, and nationwide in scope. It will not be for lack of generous support if the universities of the United States fail to secure the foremost position in aeronautical science and education.

Learning to Fly

By Casey Jones

Curtiss Flying Service, Inc.

"I HAVE just soloed." What pleasant memories this expression brings to thousands of pilots, significant of the greatest event in their flying career—the day when they first flew alone. Like the baby's first step, the boy's first whistle, the first money earned, this flight stands out as a real achievement—a milestone along the road to the accomplishment of a new art. Here is a romantic appeal, interesting to any red-blooded young man, but particularly to those of the coming generation who today, as a matter of course, know more about aviation than their elders.

There is no question but that in the near future the air will become one of the greatest, if not the greatest, of transportation mediums. What facts have we on which to base such a prediction? Many! In Europe today air commerce is exceedingly common, and it is possible to travel between all the principal European cities in as much comfort and safety, at very little more expense and far more quickly, than by train or boat. True, these lines are not paying at present, and are possible only because of government subsidy. Increased efficiency in planes and motors, coupled with increased volume of business, will unquestionably remedy this condition. During the past year the United States Post Office Department has contracted with more than ten reliable companies, whose stockholders are hard-headed business men, for the transportation of mail by air. After six months of operation, several of these lines are actually paying dividends, something unheard of in so short a period in the pioneering of any previous means of transportation. The bulk of the mail in the United States will soon be carried by air—express and passengers will follow. So, apart from the romantic side, it is well for a young man to investigate the possibilities of aeronautics as a life work.

There are many branches to the aeroplane business, such as manufacturing, engineering, operating and selling, but space in this article will not permit a discussion of their various possibilities. However, to successfully engage in any of them it is desirable, even necessary, to know how to fly.

PRELIMINARY TRAINING

Training methods, due to the experience gained by training hundreds of pilots during the war, have become fairly well standarized throughout the world. This standardization has practically eliminated the hazard that was formerly associated with flying training. So today, with proper equipment, operating facilities, and competent personnel, the casualties sustained in preliminary training are negligible. The school operated by the Curtiss Flying Service, Inc., at Garden City, N. Y., has, alone, soloed something over five hundred students since 1919 without accident or injury to instructor or student, and many other schools throughout the country have records equally good. The most dangerous period for the embryo pilot is after he has spent twenty-five to fifty hours in the air by himself, and begins to consider that he is a first-class pilot, capable of taking unusual chances. It is then that he should be especially careful, or he will soon find that it does not pay to take too many liberties with Old Man Gravity.

The usual procedure of instruction is somewhat as follows: An instructor shows the student, or a group of students, the working of the controls, rudder, wings, etc., explaining why and how they operate. After this explanation the student is required to demonstrate to the instructor, on the ground, that he understands it. They then take off with the instructor at the controls in the front cockpit, and after arriving at an altitude sufficient to give the instructor time to get the ship out of any position in which the student may place it, the controls are turned over to the student, who endeavors to follow instructions given him on the ground. There is a duplicate set of controls in each cockpit, so that the instructor at all times can regain control of the plane. The greatest danger is that the student may become overexcited and freeze the controls. Students are particularly warned against this from the time they enter a flying school. Perhaps the most remarkable thing about flying is its ease of accomplishment, for all controls work naturally. For instance, if it is desired to descend the control stick is pushed forward, to ascend it is pulled back, to bank to the right the stick goes to the right, etc., and within thirty to sixty minutes in the air the average student can keep the plane on even keel and even do gentle turns. As soon as these are learned he is started on landings and take-offs which are by far the most difficult things for the beginner, requiring, as they do, coördination of mind and body, coupled with a close judgment of speed and distance. Even these become easy with practice, and in five or six hours the average student is ready to solo. During this period pilots and students are in communication either by manual signs or by the use of telephonic helmets. After the solo flight the student continues to practice with the instructor, taking preliminary advanced instruction in various maneuvers including spirals, loops, spins, etc. This is about the extent of the training offered in the average ten-hour commercial school course, and will enable a pilot to fly safely alone provided he remembers what he has learned, is careful not to take unnecessary chances, and uses his head at all times. As one instructor aptly expressed it, "We can teach anyone to fly, but we cannot make him think."

LONG EXPERIENCE ALONE MAKES FOR SKILL

It will be noted that I was careful to state that ten hours was usually sufficient for the average student to fly safely *alone*, but this by no means infers that he is a skilled pilot ready for commercial work. It is a matter of minutes to learn how to drive a car—shift gears, steer, apply brakes, etc., but the ability to do these things does not necessarily make a competent driver. It requires continued driving so that these details become automatic. The same principle applies to flying, long experience in the air alone so that it becomes second nature. The Department of Commerce air regulations now require one hundred hours solo flying before a license is granted to carry passengers. Reliable concerns have long required at least this amount of time before employing a pilot. This brings us face to face with one of the most serious problems confronting aviation today. How can we make it economically possible for the average man to get sufficient flying to enable him to earn his living as a pilot? To the casual observer this problem may seem of little importance, and perhaps it would be if it applied only to commerical aviation, but in reality it has a direct bearing on our national defense.

SCARCITY OF TRAINED PILOTS

The Air Corps of the Army operates a very excellent flying school in Texas, giving a ten months' course with some 150 hours of flying. This course is so stiff that only a small percentage of the entrants graduate. In fact, whether or not this course is too severe is a matter of dispute in Air Corps circles. At any rate, the number of graduates is not even sufficient to take care of the increased quota of officers provided for under the new Army Air Plan, and will not be for the next five years. This means that no new pilots are being trained for the Air Corps Reserve, which is our second line of defense. Our present Reserve is composed of flyers who were trained, for the most part, during the war. Within a very few years these men will be too old to be of any real value in time of war, for aviation is unquestionably a young man's game. Therefore, the only place we can look for Reserve material is among the young men trained commercially, and consequently the problem is really one of great importance. If we get no new blood in our Air Reserve we will be in a serious position in time of war.

Unless some comprehensive plan is worked out to meet the situation there will be a marked decrease in the number of new pilots. Remember, only since January 1, 1927, has a license actually been required by law, and many who have taken up aviation since 1919 have done so, because they could start earning money immediately by operating their own planes commercially, whether they could fly or not. This is now prohibited, and wisely!

A WAY OUT

Let us take stock of what has been or can be done. A few men yearly take up aviation for pleasure, own and operate their own planes, and in time become real pilots. This requires so much capital that the vast number of young men, who would make the very best of pilots, are shut out. The Curtiss Flying Service, Inc., has developed an excellent plan of engaging such men at very small salaries as mechanics, teaching them to fly, and allowing them to continue flying over a period of years in partial payment for their mechanical services. In time these men become first-class pilots, but again the number trained by this method is very limited. Today these two classes, plus the government-trained pilots mentioned earlier, are our only sources of supply, and are pitifully inadequate to meet the needs of a growing industry and our national defense.

A plan has been presented to the War Department which is receiving the study of the various heads and which apparently has considerable merit. The general idea is for commercial schools to sell sufficient flying training to qualify a student for a Reserve pilot's rating in the Air Corps Reserve. This can be done without unreasonable expense to the applicant. He is then commissioned in the Reserve, after passing the necessary mental, physical, and flying tests, and is permitted to fly Air Corps planes for a certain number of hours per month, at the expense of the government. In return he is subject to the call of the government in the time of emergency. In a year or so, under this system, the pilot would receive sufficient time to qualify him for a commercial position. He can support himself by other means during this period, and except for his preliminary instruction it costs him nothing but his responsibility to the government. The War Department objects to the plan because of the absence of proper military training which commercial schools cannot supply. The Department, however, is considering the possibility of creating a new rating to include pilots, without granting commissions, and allowing them to fly, and giving them their commissions when they have acquired sufficient military knowledge which is to be furnished by the government. This would be a long step in the right direction. The Department has already approved of the plan as applied to applicants with the necessary military qualifications obtained through former service, R. O. T. C., etc.

Some similar system applied to the Navy training and National Guard would go far to solve the immediate problem. Aeronautical associations, aero clubs, and organizations, such as the Guggenheim Foundation, should be able to initiate workable plans for training others. In fact, as the aeronautical brains of the country are applied to the problem countless other solutions will present themselves.

The condition of the aviation industry in general is healthy. The five-year Army and Navy programs insure manufacturers of a reasonable continuity of orders; Post Office contracts for Air Mail lines and increasing commercial demands for the aeroplane are encouraging commercial operators; sane legislation by Congress, and a more comprehensive understanding of aviation by the press and public are aiding the good work. The outlook is promising.

To You, young man of pioneering spirit, ambitious for your future, and possessing a willingness for hard work, aviation offers unlimited opportunities. Learn to fly, and some day, above all material reward the future holds, will come that satisfaction that only those can know who, in the accomplishment of this new art, have said "I have just soloed."

Aircraft Engineering

By T. P. Wright, B.S.
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BY aircraft is meant any weight-carrying device or structure designed to be supported by the air. There are two classes of aircraft, heavier-than-air and lighter-than-air, the former obtaining its lift from dynamic air pressure, the latter from buoyancy due to displacement of air by a lighter gas. The present article will deal entirely with heavier-than-air-craft or airplanes.

General Considerations and Definitions

It seems desirable, before describing the engineering methods used in designing an airplane today, to review briefly the stages of development of aviation, noting particularly the engineering progress made during each stage. In order to fix clearly in mind the status of the development during each period discussed, it is well to consider the meaning of such general terms as "art," "science," and "engineering." Whereas mechanical art implies a practical application of knowledge, science refers to an exact and systematic statement of knowledge. Art always relates to something to be done, science to something to be known. In engineering is included the basic idea of executing or managing a construction or design. It will be seen that at a relatively early date a considerable amount of scientific information pertaining to aviation was brought together, and that experiments were conducted, some by scientific and some by rule-of-thumb methods. It has not been, however, until very recently, that engineering methods have been applied uniformly to airplane design and construction. This of course is true of the development of any art, as a considerable period of research and of attainment of practical experience is necessary before the systematic methods of an engineering organization can be applied.

Stages of Development

The stages of development of aviation may be conveniently grouped into three periods, namely, the period before the war, the period during and immediately following the war, and the period thereafter.

There seem to be two distinct subdivisions of the stage of development prior to the war, the first commencing about 1890 and lasting until 1903, and the second extending from 1903 to 1914. During the earlier period there were at work two quite distinct types of men. One type is represented by Professor Langley seeking knowledge of aerodynamics by truly scientific methods of research. By means of a whirling arm, Professor Langley obtained and measured the aerodynamic forces on flat plates mounted at the end of the arm. From data thus obtained, an airplane was designed and constructed, which succeeded in lifting its own weight. Unfortunate circumstances not pertaining directly to the airplane, apparently prevented him from seeing his machine with power carry a man into the air. There was another type of investigator at work during this period represented by Lillienthal in Germany, and Chanute and the Wright Brothers in this Country. The efforts of these men were directed to gliders. Great numbers of gliding flights were made, usually culminating in a disaster. These accidents were due principally to dependence for lateral control on the slight effect of shifting the center of gravity, accomplished by moving the legs of the operator. The first to solve this fundamental problem of flight were the Wright Brothers. They obtained lateral control by warping the wings on either side, thus securing a counteracting force by increasing or decreasing the lift on one side or the other of their machine, as necessitated by the attitude assumed after striking a current of air. The first human flight in a power operated airplane was made by Orville Wright on December 17, 1903. It is thus seen that this first subdivision of the first stage of development of the art closes with the attainment of flight, accompanied by the accumulation of a certain amount of scientific knowledge, some gained through laboratory and some through gliding experiments.

The next period, from 1903 to 1914, is characterized particularly by the rapid development of an adjunct of the airplane, the gasoline engine. Only slow progress was made in the development of the airplane itself. Flights of greater speed and longer duration were achieved and a number of improvements made. The outstanding flyers of this period were the Wrights, Curtiss, who was the first to fly from and light on the water, Bleriot, Santos Dumont and Farman. Their contribution to the art was of the nature of invention. There was, however, another type of men at work who were developing and using the basic equipment used in aerodynamic research, the wind tunnel. Experiments of vast scientific value were carried out in France by Eiffel, in Italy by Crocco, in Germany by Prandl, and in England at the National Physical Laboratory. The standard mathematical equations of motion of a rigid body were applied to the disturbed motions of an airplane by Bryan in England, culminating in his book published in 1911. No essential changes in the theory have since been found necessary. This period of development may be considered as closing with the commencement of the war. The art had advanced to such an extent that it may be considered that the mathematical theory was established; scientific experimental equipment was being used, and flights were being made. There was, however, strictly speaking, yet no airplane engineering.

The next stage of development includes the years of the War and the two or three years just following it. The advance of course was by leaps and bounds. However, the progress, both in quantity and quality required, was greater than could be attained on a sound engineering basis. In consequence there were many design failures, only discovered as such after very large quantities of units or completed machines were constructed. Engineering organizations were gotten together, and functioned to as great an extent as was possible under the conditions. The machines produced were, however, more of the nature of designs by individuals than by systematically functioning engineering groups. It may, however, be said that it was during this period of rapid advance that airplane engineering commenced Certainly the science of aeronautics was well advanced.

The latest stage of development can also be divided into two periods, from 1921 to 1925, and from 1925 to the present time. The former period was characterized in the industry by the successive failure of over half of the companies existant at the close of the war. There were endless controversies and investigations. In the companies which were able to exist, only slight progress could be made in engineering, as in all but one or two cases the engineering organizations were disbanded. Some advance in the art was made, however, notably in the development of high speed machines. During this period speeds were increased roughly from 150 to 250 miles per hour. Also, although not involved in the engineering progress of the art, this period saw the commencement of commercial aviation in this country, the most noteworthy feature being the establishment and successful operation of the Air Mail. The lack of a definite policy on the part of the government with regard to the industry, received a great deal of attention, and after several Congressional committees had investigated the situation, a group was selected by the President to report fully the conditions found after making a thorough search for facts. This was the Morrow Board, whose report in December 1925 may be considered as one of the most important documents of American aviation. Sound recommendations were made on practically all phases of the subject. The subsequent adoption by Congress of the greater part of the recommendation gave new life to the industry and new impetus to progress in the art.

The latest period of this stage of development may therefore be considered as beginning just after the Morrow Board report was published. Civil aviation started to be a reality; military aviation policy was established, and the industry was in a healthy condition. This permitted the continuance and formation of airplane engineering groups, comparable in organization and in methods used to those of the more firmly established industries. Thus in the present period theory and practice are being coordinated so that aeronautics may be now considered both an art and a science, with designs produced with advance assurance of success, because of the systematic methods employed by the Engineering Departments of the various companies. It has been said that "progress in engineering science, like changes in the sphere of political organization, may be by evolution or by revolution." In general, during the earlier stages of development described above, the latter type held. It is believed that the present stage may be characterized as a period of evolution. There is being made a scientific analysis of experience gained, reducing the lessons to engineering terms. It is a period of "patient spade work," much needed in aviation.

PRESENT STATE OF THE ART

Airplane Engineering

Airplane Engineering is perhaps unique in that it includes within itself practically all other recognized branches of engineering. Although, of course, no branch of engineering when dealt with in practice can be found to be isolated and out of contact of some sort with other arts and sciences, it appears that in Airplane Engineering, more than in other cases, a considerable number of distinct branches of engineering assume a major and equal importance.

Naval Architecture

For the general method of attack of new problems, the airplane engineer borrows from the naval architect. All engineers base their procedure, or should do so, on the experience of others in their field, yet it is perhaps more true in naval architecture than in other branches, that new design is made to follow closely a precedent of former practice; with only sufficient improvement to warrant the new structure. Aside from the general method of attack there are three or four specific problems which are common to the naval architect and the airplane engineer, and which are treated in much the same manner. These include problems of weight with its distribution, the design of propellers, the determinations by model test of the dynamic factors entering into conditions of equilibrium, and the determination by an entirely different type of model test of the stability and general behavior of floats or hulls on the water, used in designing seaplanes and flying boats.

Without doubt, weight and weight distribution, or balance, are of more importance in airplane design than in any other branch of engineering. The very nature of the duty which an airplane performs, the lifting of objects into the air, indicates that the strictest attention must be paid to weight economy. It has been said that a new design can be judged a success or failure immediately, when after completion, it is placed on the scales. A measure of the efficiency of an airplane is the ratio of the useful or disposable load carried to the gross weight. Obviously, any overweight in the structure reduces by an exactly equal amount the useful load for which the machine was designed. The essential nature of weight economy must be constantly before the airplane engineer.

An airplane must not only be light, it must also be stable. This characteristic is dependent on the location of the center of gravity, or on weight distribution along the longitudinal axis. Therefore, when considering any detail of the design which calculations or actual weighing shows to depart in weight from the original estimate, due account must be given to the effect on balance as well as on reduction in useful load involved.

In the design of the screw propeller the airplane engineer and the naval architect are on common ground. Although the effect, quantitatively, of the various elements of design, are vastly different in the case of a propeller designed for use in air as compared to one for use in water, nevertheless the same problems do exist. It is quite interesting to note that it is only quite recently that air screw designers have come to realize that better results can be obtained by modifying slightly a previously constructed successful design, rather than by attempting to effect a completely new design, based on theoretical considerations, to cover the new conditions. This fact has, of course, long been known and followed by the naval architect.

Before proceeding with the construction of a new design of ship, the naval architect assures himself that the completed vessel will be satisfactory on the water from the standpoint of stability in waves, by testing a model in a towing basin. The airplane designer uses the same equipment in connection with float and hull design for seaplanes, and analogous equipment for determining stability and controllability characteristics of his machine in the air. The latter equipment consists of a wind tunnel, in which all forces and moments on an accurately constructed model are determined for the various attitudes which the airplane may assume. An air stream of known velocity is forced past the model which is mounted on an extremely accurate balance. From the results of such model tests and with a knowledge of the laws of dynamic similarity, the aeronautical engineer can predict, with an accuracy astonishing to the laymen, the characteristics and performance of the full size airplane.

Aeronautical Engineering

Aeronautical engineering is a new branch, peculiar to the design of airplanes. In the present instant it is defined as covering the limited field of aerodynamics although it is frequently and perhaps more correctly made synonomous with airplane engineering. The aeronautical engineer deals with the forces produced on solid bodies by air in motion. His particular field in airplane design is, therefore, air resistance, stability, and controllability, all of which are determined both analytically and experimentally. The wind tunnel, described above, is the equipment of the aeronautical engineer.

Civil Engineering

In matters of structural design, the methods of the civil engineer are closely followed. They are, however, extended and refined to an extent seldom, if ever, required in bridge or building construction. This refinement of structural analysis is necessitated by the extreme importance of weight saving, above referred to, and by the equal or greater requirement of absolute structural safety. Each detail, as well as the main structural members, must be carefully analyzed for strength and weight; the two factors interact throughout the design. The problems encountered are more novel and varying in character, and, therefore, require closer study than is usually necessary in the structural analyses involved in the older branches of structural engineering, such as the design of bridges or buildings.

Mechanical Engineering

The mechanical engineer is found in an airplane engineering organization in the design staff, where he lays out and designs not only the general arrangement of the complete machine, but also the detail parts and mechanisms. The number and diversity of parts involved in an airplane are frequently not realized. Essentially an airplane consists of a body, the functions of which are to house the crew, passengers, cargo and equipment; a supporting wing structure; stabilizing and control surfaces, with necessary control mechanism; landing gear for alighting on land or water (or both) and the power plant consisting of engine and propeller. All require for proper designing the attention of the mechanical engineer.

Materials Engineering

Under this heading is included the metallurgical and chemical engineering branches. Alloys of steel and aluminum, requiring the attention of men versed in the above sciences, are used extensively in airplane construction. In addition, there are a great number of other special materials used including wood, fabric, dope, paint, and miscellaneous non-ferrous metals. When consideration is given to the ever present need of weight saving, it can be seen that highly trained men must have cognizance of the special problems arising from the use of materials of such a diversified character.

General Engineering Problems

Under this heading fall the problems, common to all engineering concerns, such as drafting, estimating, inspection and standardization. The latter consideration is one requiring constant attention, in order that there may be attained a proper balance between reduced costs of construction on the one hand, and advancement of the art on the other.

The above outline, indicating the branches of engineering involved in an airplane engineering department, will immediately suggest the prime necessity of organization, and the establishment of systematic methods of procedure in producing new designs. Being new and difficult, the field is of necessity inspiring.

EQUIPMENT

The vast expense involved in producing a new design makes it absolutely essential, that insofar as is humanly possible, all chance of failure be eliminated. This makes necessary the availability to the airplane engineering organization of proper equipment. The principle items of equipment necessary are the following:

1. Wind tunnel for predetermining aerodynamic characteristics.
2. Testing machines for determining strength of materials and parts.
3. Static test equipment for testing structural assemblies.
4. Model basin for predetermining hydrodynamic characteristics of floats.
5. Whirl test rig for testing propellers.
6. Flying field and full flight test equipment.

All items should be immediately available for use. The expense involved is, however, more than any company now existent can afford to set aside for this purpose. Nevertheless, it is extremely desirable that the first three and last items be directly available, and operated by the staff of the designing organization. At present all the large companies are equipped with items 2 and 3; several with item 6; one or two with item 1; and none with items 4 and 5, in which cases it is necessary to have recourse to government owned and operated equipment.

In order to establish airplane engineering on a scientific basis, good equipment must be available. It is to be hoped that all major companies will gradually equip themselves with the items above listed. The ideal toward which airplane engineering should develop, is the creation of designs through a systematic procedure, by a group of guided experts using properly functioning equipment.

RESEARCH

Although a great amount of aeronautical research, both along the lines of applied science and pure science, has been accomplished and recorded, there is still a practically limitless field ahead. It is the duty, for the advancement of the art, for each company to bear the burden of its share of research work. At present this must of necessity be confined to the realm of applied science, leaving investigations in pure science to governmental agencies, such as the Laboratory Staff of the National Advisory Committee for Aeronautics and the staffs of the Universities, which have aeronautical courses and laboratories. This duty is being realized more and more, and it is believed that companies will automatically equip themselves, both with laboratories and personnel, as the growth of the industry permits.

DESIGN PROCEDURE

The general function of an Airplane Engineering Department is to develop designs and produce drawings by means of which can be constructed airplanes which are structurally sound; aerodynamically stable and manoeuverable; which possess the specific qualities and characteristics originally specified; and which are so designed as to be susceptible of construction at a profit in competition with the product of other concerns. To attain this end, it is necessary to properly coördinate the work of the engineers who control different phases of the design, as above described. This coördination is, in practice, attained by establishing a definite design procedure which permits each expert to approve the design, at the proper stage of development, and for the features coming under his cognizance. The procedure believed best adapted for this purpose is the following:

1. A discussion by the experts, in conference, of the design elements laid down in the specification requirements, with an agreement reached on the general type of design to be followed.
2. The development and approval of a general arrangement drawing; descriptive specifications; weight, balance and performance estimates; characteristics sheets; and wind tunnel tests.
3. The development and approval of structural and assembly arrangement drawings; stress analyses, strength tests and weight calculations.
4. Production of detail construction drawings.
5. Construction, with engineering control of inspection and weight and design changes.
6. The superintendence of final weighing of the finished airplane and of flight tests.

CONCLUSION

In the preceding pages, an attempt has been made to trace the development of aviation in terms of progress in the scientific and engineering field. As opposed to the conditions that maintained during the early stages of development, when the men interested in aviation were either pure scientists or inventors, it has been shown that today the engineering phase of the art is operative. With the art on a scientific basis, the engineer can continue the progress in an orderly fashion. It is the job of the airplane engineering organization to coördinate the works of the research laboratory, the statistician and the engineering expert in specific phases of the design, to the end that a reasonable and useful machine, slightly better than anything of its class previously constructed, may come into existence. This indicates, as previously mentioned, the most desirable form of progress, that is through evolution as distinguished from the occasional occurence of more rapid advance (not always lasting) brought about, to use a political term, through revolution. Granting that attainment of more rapid means of transportation of both men and goods is a measure of general progress and prosperity, certainly the benefits to mankind which can be envisioned from aviation are vast and almost limitless. The progress now being made in airplane engineering is extremely gratifying to those deeply interested in its development, and the fact that it now appears to be on a sound basis of organization, comparable with engineering in other branches of the automotive industry, bodes well for the future advance of the art.

The Story of the Airplane Engine

By George F. McLaughlin
Technical Editor, *Aero Digest*

PARALLELING the great strides made in aircraft development, the airplane engine has kept apace, and has governed to a large extent, the limits of progress in the air. From the crude power plants of twenty years ago to the highly efficient, one thousand horsepower engine units of today is a very wide gap, filled between with a technical romance and history which equals that of the airplane itself.

Early Engines

Early experimenters in heavier-than-air flight were defeated at the outset by lack of an engine suitable for the propulsion of the various aircraft types they had conceived. There is no attempt to dim the glory of the Wright brothers' achievements, when it is said that the existence of a suitable engine might have brought the advent of the first flight earlier. It is not surprising, however, that pioneer experimenters met with indifferent results, when it is realized how widely separated are the aerodynamical problems of flight as compared with the mechanical requirements of engine building. These pioneers were essentially scientists with an extremely difficult problem to solve—the problem of sustaining a heavier-than-air vehicle in flight. They were all beset by the question of motor power, which in itself presented its own set of difficulties.

It was the Wright brothers, however, who had the happy combination of a suitable engine, crude though it was, combined with a glider which they had demonstrated beyond all doubt was capable of prolonged flights.

At first, steam was believed to be the best source of power, and one of the pioneers in Europe (Maxim) devised what is even at this date regarded as a highly perfected steam engine for his experiments in flight. One of the first pioneers to use a type of engine now in general use, the internal combustion engine, was Langley, who had a specially constructed engine of this type built to his order by Manley.

The Wright Brothers' Engine

When the Wright brothers concluded, after their many years of gliding experiments, that power-driven aircraft were an immediate possibility, they sought a ready-made automobile-type engine which they hoped might be adaptable to their craft. Diligent search, however, failed to reveal any power plant even remotely possible for their use, and they were forced to temporarily abandon their gliding experiments until they could themselves design and construct an engine light and powerful enough to drive their new plane. Their mechanical ingenuity gave them a tremendous advantage over their rivals for first honors in the air. They were able to produce a four-cylinder engine giving them the power they required—about twelve horsepower.

The first engine built by the Wright brothers weighed about one hundred and seventy pounds. Compared to its power it will be seen that its weight is fourteen pounds for each horsepower developed. When this is further compared to the engines of today which weigh less than two pounds per horsepower, the advance in engine design on this basis alone is at once apparent.

In the matter of reliability there has been an even greater advance. The first flights of the Wright brothers in 1903 were recorded in mere minutes and seconds, due to the fact that the lubrication system of their engine was not developed and it ceased to function after a very brief run. Contrast this with the reliability of today; modern aircraft engines have been tested in runs of more than three hundred hours at full power, with no appreciable diminishing of efficiency. Translated into miles, in an aircraft traveling at one hundred miles an hour, this would be equal to a distance of 30,000 miles. We are inclined to regard the modern automobile engine as a high standard of efficiency, but even forgetting that an auto engine weighs something like fifteen pounds per horsepower, imagine how the engine of your car would withstand a 30,000-mile trip at its maximum power without stop!

Among the most successful pioneers in engine development was Glenn H. Curtiss, who produced several highly efficient engines to drive the aircraft he constructed at Hammondsport shortly after the Wrights made their historic flights. His first conspicuous success in the air was the winning of the speed race at Rheims, France, in 1909, in a plane powered by a marvelous power plant of his own design, which weighed about two hundred and fifty pounds and developed fifty horsepower. This engine weighing five pounds per horsepower was then the most efficient power plant in the world.

THE GNOME AND OTHER ENGINES

In the air-cooled engine types greater efficiency was obtained less than a year later, when the famous Gnome engine was produced. This engine gave thirty-four horsepower and weighed one hundred and thirty-two pounds. This means that the weight per horsepower was 3.9 pounds. Henri Farman, in October, 1909, flew for three hours and four minutes with a Gnome engine. It was in the same year that Louis Bleriot flew across the English Channel in a monoplane powered with a twenty-five-horsepower Anzani engine. The British were roused to activity by this exploit and, in a contest sponsored by Lord Northcliff, Colonel Cody won a prize of £5000 for a flight from London to Manchester. In Germany the Kaiser Prize Contest for the best aviation engine was held in 1913. Competitions of this nature assisted and made possible such successful engines as the Benz and Mercedes.

Between 1907 and 1910 the fifty and eighty-horsepower E. N. V. engines were built in France, and their efficient working made possible numerous short flights during that period.

INFLUENCE OF THE WAR

The war naturally exerted an accelerating influence on aircraft engine development, and in England, France, Germany and the United States, engines of the most varied types made their appearance, improvements being rapid under the stern necessity of war requirements. America's greatest contribution to the war was the conception and production of the standardized Liberty engine which was used in great quantities in airplanes of French and British design. This engine is a twelve-cylinder water-cooled "V" type engine which weighs eight hundred and forty-five pounds and delivers four hundred and twenty horsepower. The weight of two pounds per horsepower is a marked achievement for that period.

ADVANCE OF AIRCRAFT DEPENDS ON ENGINE

The advance of aircraft at present largely depends on the progress of the airplane engine, and improved types of motors are being built in the United States, Great Britain, Italy and France.

In Great Britain there are forty types of engines in regular production by a dozen manufacturers; in France also about forty types produced by about fifteen manufacturers; in Italy we find about twenty types constructed by ten firms; and in the United States eight concerns produce more than twelve types.

An interesting example of a large aircraft engine is the Napier "Cub," a sixteen-cylinder one thousand-horsepower water-cooled type. With the development of light sport airplanes, a new market opened for low-powered motors and the smallest production engine on the market at this time is the twelve-horsepower French Salmson A. D. 3.

Notable examples of American aircraft engines are the Packard water-cooled eight hundred-horsepower standard and inverted types, and among the air-cooled the Wright "Whirlwind" two hundred-horsepower and the Pratt & Whitney "Wasp" four hundred and twenty-horsepower. Around the latter are designed the latest types of Naval fighting and scouting planes. The air-cooled engine was found particularly advantageous for the Naval work because of the absence of the water-cooling system and its attending complications.

The Pratt & Whitney engines have as their standard equipment a built-in supercharger. The aim of the supercharger is to supply air to the carburetor under a pressure higher than that of the surrounding air. The presence of a supercharger of the type used on the "Wasp" increases the power of the engine at sea level and diminishes the usual drop of power with increase in the altitude. The "Wasp" is a fine example of an air-cooled engine, and can be claimed to be the leading in the world.

REQUIREMENTS FOR ENGINES

The seven major requirements for aircraft engines are: minimum weight per horsepower, minimum consumption of fuel, and oil, minimum frontal area, maximum reliability, maximum durability, minimum initial cost and minimum cost of maintenance. In aiming to meet these requirements great strides have been made, and where obviously one engine may not possess all the desirable attributes, we have a number of proven types of engines today which meet conditions of service in a highly satisfactory manner. In the United States we have water-cooled engines in production ranging in power from two hundred to eight hundred horsepower and air-cooled engines of two hundred and four hundred horsepower which fairly well meet the needs of our requirements for military and commercial use. The trend recently has been toward the air-cooled engine, and a five hundred-horsepower unit of this type is now under development.

At the present time the efforts of engineers are directed toward perfecting a Diesel type of engine. The primary aim is to obtain higher fuel economy and increase the power of the cylinder unit. Superchargers seem to be of high importance in the development of the Diesel type engines.

Gas turbines and steam engines have also been studied, and the two-cycle explosion type has its followers. Two-cycle and heavy oil engines have certain practical advantages over more radical types of the gas turbine and the steam engine. It is hard to predict what is possible in metallurgical progress, and should we obtain materials capable of resisting higher loads at higher temperatures, designs impossible today may become practically possible. The fact that prominent engineers are behind these researches is a fair guarantee that the four-cycle explosion-type engine as we know it today, in spite of its high state of perfection, will in the future be superseded by a mechanism much more economical in fuel and power, and of greater power in relation to its weight.

Airplanes in National Defense

By General William Mitchell, D.S.C., D.S.M.

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TO speak of "airplanes" in national defense as applied to an Air Force is much the same as speaking of the "rifle" as applied to an army, or the "warship" as applied to a navy. Therefore, in considering the "airplane in national defense" we must think of it as the vehicle which is the means of conveying "air force" through the air, much in the same way that a man's legs are the final analysis of land force, or the vessel is the vehicle of sea force.

The Problem

National defense means the protection of the country, primarily, from outside aggression, international war, not internal disturbances for which we have police forces and constabularies.

Each nation has its special problem in national defense. We, in the United States have a comparatively simple one. We have a compact country, rich in practically every element necessary to maintain ourselves in an international war. We are the most self-contained country in the world, and should be able to defend ourselves against the world, providing we apply the elements which the Almighty has given us in a common sense way.

The term "war" signifies the condition which results when one nation attempts to impose its will on another by physical means. The methods employed are directed towards paralyzing the ability to make war on the part of the enemy, while at the same time protecting one's own power to continue the strife.

Ancient and Modern Methods

If the vital centers of the opposing nation are destroyed, or made incapable of carrying out their part in the upkeep of the people, resistance is no longer possible, and capitulation or surrender is the outcome.

According to ancient methods of warfare, these vital centers of a country were protected by groups of men put out in front of them, to prevent other men from moving along the ground and possessing themselves of the vital places. People then fought in only one dimension, the surface of the earth, which was the decisive area, and the surface of the sea, which was an auxiliary area. Now military operations have been carried: (1) into the air, which covers the whole earth with a highway ten miles deep; and (2) under the sea, which gives the maximum amount of concealment to the vessels operating in the water.

The methods of land armies and surface navies have changed little since men first began to fight on the land and the water.

Improvements in Weapons

Each succeeding military epoch has seen an improvement in the mechanics of conducting war. Each improvement in weapons has given the defense more power to arrest the advance of the opposing force. Sixty years ago in our Civil War, one man well entrenched might have been able to hold off five attacking him. Now one man may be able to hold off fifty.

These improvements in weapons have operated to make land armies more and more incapable of obtaining victory over the opposing state. A climax was reached in the European or World War. There the armies, after some preliminary maneuvering, sat down in a series of trenches and indulged, during four years, in an orgy of killing that merely led to the complete exhaustion of all the combatants without substantial gain to any. The armies only advanced or retreated about sixty miles during this whole time. The directing heads of the armies were entirely unable to bring about victory for either side. Had this method of warfare been continued, it might have led to an entire extinction of what we call civilization today. Just as happened in Europe, after the fall of the Roman Empire, when with a destruction of all means for preserving the peace and maintaining a governmental organization, the known world reverted to a state of savagery which we call the dark ages. Armies, therefore, have become holders of ground, they cannot advance over it with rapidity to the vital centers of an opposing nation and bring about a quick and decisive victory. Air forces with the airplane are the means of going straight to the vital centers of the opposing side and paralyzing them.

ON THE SEA

On the sea the surface vessels are entirely at the mercy of air forces with the airplane. The greatest battleship is even more vulnerable than the smallest torpedo boat. This is because the battle ship cannot conceal itself, is comparatively immobile and inert as far as air power is concerned, and is possessed of no adequate means of defending itself against air power. Therefore, the surface fleet, as a means of controlling the sea in a contest between two great industrial nations, has lost its value. What main operations are carried on in the water in the future will be handled by submarines which proved decisively in the last war what their value is. The keeping of large surface navies, by some of the great powers at present, is merely a result of inertia, and the maintenance of the immense interests both personal and financial, which man the navies and supply and sell the equipment to the governments.

IN THE AIR

The airplane is now the arbiter of a nation's destiny. There are no longer frontiers, in the old way. A nation's frontier now is a blanket of air ten miles thick, laid entirely over it. To illustrate, let us consider the vital area in the United States. It lies in the triangle, Chicago, Bangor, Maine, and Chesapeake Bay. Roughly the distances are about 750 miles on a side, or from four to six hours' flying with modern aircraft. In this district are located New York, Philadelphia, Washington, Pittsburgh with all its iron, Pennsylvania with its coal and oil, the great cities of the middle west, Detroit with the world's motor industry, Cleveland, the railway neck or straight, as it might be termed, south of Sandusky, Ohio, where the great transcontinental lines come together, and then Chicago the keystone of our arch of dominion. Two-thirds of all we possess as a nation; people, agriculture, manufactories, animal industry, wealth, lies there. Suppose that New York were paralyzed. By this we mean made uninhabitable for its population so they would have to leave it and go to the open fields and forests fifty or a hundred miles away. The population of the area within twenty-five miles of New York is about as great as that of all of Canada, almost twice that of

Australia and more than the populations of some of the countries of Europe. A few shells, gas, explosive or incendiary landed in Manhattan would cause a complete evacuation. It is not necessary to destroy the physical structure of a city today to paralyze it. That was a method of ground armies because they could do nothing else.

Aircraft can stand off a hundred or more miles and launch air torpedoes carrying hundreds of pounds of gas, explosive or fire-making compounds, and hit a place like New York practically every time. The air torpedo is like an airplane controlled by gyroscopes which will pilot it in the direction and for the distance desired. In case the wind deflects it from its course it may be corrected by radio or wireless control. Either large airplanes or dirigible airships, such as the Zeppelin, that last crossed the Atlantic are able to carry these. Airplanes do not have to fly over a place to attack it. Not only may they use the air torpedo but they can also put wings on their bombs which will allow them to glide for many miles to their objective. The variety and power of weapons that aircraft can carry are the greatest that the world has ever seen. Poison gas can be sprayed over fields and agricultural areas so as to kill the vegetation, and prevent its being used for long periods. All live stock, as well as people, may be destroyed in a similar manner.

Suppose that New York, Chicago, and the railways south of Sandusky were paralyzed. It would disrupt our whole existence as a nation. Suppose next that Pittsburgh, Detroit, and the Mackinaw Canal were put out of business, and that the air attacks against these places were continued so as to keep them paralyzed. Within a very short time the nation would have to capitulate or starve to death.

These places can be attacked directly through the air from Europe now, and either directly or with auxiliary bases from Asia. Such is the carrying capacity and power of navigation of aircraft that can be constructed at this time.

Armies and navies are entirely powerless to stop such proceedings, because no weapon or device operated from the ground is able to stop or even remotely hinder air operations.

THE ADVANTAGE OF THE AIR

Suppose that New York and Philadelphia were the vital centers of two states at war with each other. Suppose that New York had a tremendously strong army but a very weak air force, but that Philadelphia had a very weak army and an immense air force. The New York army would take up its march towards Philadelphia. It would make two and one-half miles an hour. The Philadelphia army would entrench near the Delaware River where fifty times its number of men on the ground could not dislodge it. The Philadelphia air force would launch a gas and explosive bomb attack against New York. It would take one hour and a half to fly there, and forty minutes to make the air attack. New York, the air fields of its air forces, and probably its army would be destroyed in less than a day, and the war would be over. The armies would merely hold the ground. If they were too large they would eat up so much food, and require so much equipment, that it is conceivable that they might take so much vital power away from the population and air power as to almost defeat themselves. A nation today can very easily have too large an army.

Suppose that this country were menaced by a European nation possessing an immense navy, and that we had no navy but a well-ordered air force. We can exist, fortunately, without outside assistance; in fact we would feel the lack of very little no matter whether we had all the sea communications or not. Should the opposing surface navy venture out into the sea it forms the easiest object of attack and destruction which has ever been presented in warfare. In fact, in a modern war these vessels would probably be destroyed before they ventured forth from their harbors. Aircraft using the air torpedo, the water torpedo, the gliding bomb, the dropped bomb, gas curtains, mines and gun fire are able to destroy and sink these leviathans with comparatively little effort in lives and expenditure. The submarine alone, of a navy's devices, forms a difficult problem for the airplane to handle. Concealed beneath the surface of the sea it is difficult to find during the day; cruising or lying quietly on the surface of the sea at night it is inconspicuous compared to the great surface vessels. Aircraft, however, provide the best means of defense against submarines, except submarines themselves. As a means of defending our coasts against the old-fashioned naval attack, aircraft are an absolute and positive protection. In fact no nation would be foolish enough to send a navy to certain destruction against a nation well provided with an air force.

NO DEFENSE AGAINST AN AIR FORCE

What is the defense against an air force then, it may be asked? The answer is that there is no absolute defense against an air force. The air is such a tremendous place that it is practically impossible to find each and every aircraft that an enemy possesses. An air force, however, is the only means of meeting an opposing air force. In war the nation that gets in the first great air blow amidst the enemy is the one that will win. Should war be declared tomorrow between England and France, France would launch a night attack against London with a thousand airplanes tomorrow night. London is only forty minutes' flight from the French coast. England would have to attack Paris two and a half hours away with less than half the airplanes that France has. The attack would be decisive; London would be destroyed. In a couple of weeks the war would be over. England's army and navy would do her no good. She knows this full well, but on account of her geographic position and the location and configuration of her insular country she cannot escape it.

The use of aircraft in war might be likened to the "punch" which two prize fighters are able to deliver. We might consider that neither had any "defense" and could hit the other at will. One with the "punch" would "land" no matter how the other hit, and the fight would be over. Never has there been any power or force in war, where it has been as important to get in the first "punch" as is the case with air power. In the old days people might pick up pitchforks and flint lock muskets and defend themselves. Now to construct the equipment for air power takes years of preparation by men that know what it is all about. Armies and navies are entirely incapable of either visioning what it is or carrying it out. The United States never sent a completely equipped airplane of American manufacture to the War in Europe.

The contest now between the great nations, to protect their trade, their institutions and their national integrity, is not huge armies, not tremendous and costly naval bases scattered over the world, but the development of *air power, air bases* and *aircraft.*

THE AIRPLANE—THE FUTURE ARBITER OF THE WORLD'S DESTINY

The unusual thing about air power is that a commercial air transport airplane is practically as useful as what is termed a military plane. One may be transformed into the other by merely loading the weapons of destruction, bombs and bomb sights, on it. That is the work of a few minutes. England and France thought that they were clipping Germany's fighting wings when they put into the Treaty of Versailles that Germany should produce no military aircraft. Germany has built a great "civil" aviation. Germany has the greatest dye factories and chemical factories in the world. These factories can be transformed into poison gas sources in a day. The "commercial" airplanes can be loaded and dispatched to London or Paris over night and inflict incalculable harm. Germany today holds "up her sleeve" the power of the greatest military surprise of the ages. More than the surprise of her "Big Berthas," more than her gas, and more than the great mobility of her troops in the last war.

Airplanes and synthetic chemistry hold the future national defense in their hands. The nation that has these will dominate, because it will be able to exist.

Therefore, when we consider "the airplane in national defense," as this article is entitled, we must look to the future, not to the past. We must relegate armies and navies to a place in the glass case of a dusty museum, which contains examples of the dinosaur, the mammoth, and the cave bear. They still must be kept, because we must always maintain something that is still sure and useful in its particular sphere as the dinosaur was. But we must not entrust our national defense to these honored but obsolete services, because they will surely bring us to the Scilla of the fixed and narrow routine of the armies, and the Carybdis of the "brass hats" and organized buncombe of the navies. *The airplane is the future arbiter of the world's destiny.*

The Air Mail

By HONORABLE W. IRVING GLOVER

Second Assistant Postmaster General

AS the time is fast approaching when the Post Office Department will relinquish the operation of the Air Mail Service in favor of private contractors, it appears fitting that a brief history and summary of the accomplishments of the service be given.

THE POST OFFICE SERVICE

The first air mail route in the United States was established between Washington, D. C., and New York City on May 15, 1918. The service was inaugurated in conjunction with the War Department. The War Department furnished planes and personnel and handled flying and maintenance operations, and the Post Office Department handled the mail and matters pertaining thereto. On August 12, 1918, the Post Office Department took over the entire operation of the route, furnishing its own equipment and personnel. A two-way six-day-a-week schedule was maintained.

The New York-Washington route was operated continuously from its inception until May 31, 1921, when it was discontinued. During this period the Department had been working toward the establishment of a transcontinental service from New York to San Francisco. On May 15, 1919, the first leg was established between Cleveland and Chicago; the second leg, New York-Cleveland, on July 1, 1919; the third leg, Chicago-Omaha, on May 15, 1920; and the last leg, Omaha-San Francisco, on September 8, 1920. However, at this time no through schedules were operated, mail being relayed by plane to advance delivery at destination. For instance, mails were flown from Chicago, Illinois, to North Platte, Nebraska, and placed on a train that had left Chicago approximately twenty-four hours earlier. No extra charge was made for this service.

A route was established between Chicago and St. Louis on August 16, 1920, and discontinued on June 30, 1921. Another route, between Chicago and the twin cities (Minneapolis and St. Paul, Minn.) was established December 1, 1920, and discontinued June 30, 1921.

The 32-hour daily schedule between New York and San Francisco, involving night flying between Chicago and Salt Lake City, was inaugurated July 1, 1924. Mails were carried entirely by plane between cities located on the route. Increased postage rates for this service were charged.

On July 1, 1925, a five-night-per-week schedule of overnight service between New York and Chicago was established This service was made daily as of May 15, 1926. Mail posted at the close of the business day in New York or Chicago is delivered to the addressee the following morning in the cities named. This effects a saving of a whole business day and is comparable to night letter service of telegraph companies.

PLANES USED

When the service was inaugurated in 1918, Curtiss JN4H planes with Hispano-Suiza motors were used. Soon after the Post Office Department took over the details of operation in August of 1918 a number of Standard

Aircraft Company mail planes were purchased. These were also equipped with Hispano-Suiza motors and carried two hundred pounds of mail.

Rebuilt DeHaviland planes with Liberty motors were largely used as the various legs of the transcontinental route were established. However, at one time or another, planes of the following types were used extensively: Curtiss R4, with Liberty motor; Curtiss HA, with Liberty motor; DeHaviland, with two Hall Scott L6 motors; Martin mail planes, with two Liberty motors; JL6 (Junker) planes with 240 H. P. BMW motors.

By an elimination process from the inception of the service extending to the year 1922, the service had standardized on DH planes with Liberty motors and disposed of all other types. A number of factors contributed to this end. Unused stocks of Liberty motors were available and were to be had at nominal cost. Improvements made on the Liberty motor, such as heavy stub tooth gears, drilled pistons and improved oil pump, indicated its reliability and dependability as comparable with the latest developments of the time.

A number of DeHaviland planes were obtained by transfer from the War and Navy Departments. Remodeled and rebuilt into mail planes, they were speedy, reliable, long-lived, and capable of carrying a mail load of five hundred pounds. Besides, experience had proven they were a comparatively safe plane to operate.

Owing to increased use of the superior service offered by the speedy delivery of letters by air mail, and the establishment of numerous contract routes in 1926, a plane capable of carrying a larger load than that accommodated by DeHaviland planes became necessary. As a result of competition among various aircraft manufacturers to secure a plane superior to the DeHaviland, fifty-one Douglas mail planes were purchased in 1926. These are now used between New York and Salt Lake City. DeHavilands are in use between Salt Lake City and San Francisco. The most noticeable advantage of the new equipment is increased speed and ability to carry twice the load of a DH.

In the early days special rates were charged on mail carried by airplane, but due to the lack of patronage in the year 1919 the extra charge was discontinued, and ordinary mail was carried. Effective July 1, 1924, when the through transcontinental service was inaugurated, special airplane postage rates were again put into effect, and since that time only mail bearing the special rate of postage has been handled by airplane.

GROWTH OF SERVICE

There has been a consistent steady growth in the use of the service since the transcontinental schedule went into effect. The average daily load on the transcontinental in July, 1924, was 621 pounds; in July, 1925, 757 pounds; in July, 1926, 882 pounds; and in December, 1926, 1106 pounds.

A major portion of the increase in July, 1926, can be properly attributed to the contract route feeder lines established in 1926. It is expected that the establishment of a domestic universal rate of postage of ten cents per half ounce or fraction thereof, regardless of distance or contract routes traversed, will have a stimulating effect on the amount of mail handled. This new rate went into effect February 1, 1927. A further reduction to ten cents *per ounce* is being given serious consideration at this time.

WEATHER DIFFICULTIES

One of the first and most difficult problems to confront the Post Office

Department when it began the operation of aircraft was inclement weather conditions. And today, despite what has been learned and what has been accomplished, "weather" is the outstanding cause of delayed and defaulted trips. It is now possible and even practicable to fly what in 1918 and 1919 was termed bad weather. However, at the present time mail planes are unable to attempt trips due solely to weather conditions. For instance, freezing mist or rain will bring a plane down in a very short time. It is possible to fly through or over fog or low clouds encountered on a trip, but no means have been developed whereby it is practicable for a plane to be landed safely on a field covered by a dense fog.

When the Department began to use Liberty motors it was not an uncommon occurrence to have delayed and incompleted trips due to motor trouble. However, by developing and perfecting rigid inspection, servicing and overhauling methods, actual forced landings on account of motor trouble are a rare occurrence. Likewise, forced landings on account of failure of the plane or plane parts are almost unheard of, due to proper inspection and servicing.

CROSS-COUNTRY NIGHT FLYING

When in 1923 the Post Office Department decided to carry out certain experiments to determine if cross-country night flying on regular schedule was possible or practicable, a momentous step in the development of aviation was taken. Up to this time very little night flying had been done. The U. S. Army Air Service had carried on some experiments and developed certain necessary equipment, but had attempted very little regular scheduled cross-country flying at night. The Army obligingly placed all the knowledge they had gleaned from their experiments at the disposal of the Post Office Department. Beacon lights were installed between Chicago and Cheyenne, planes were equipped with landing lights, emergency fields were prepared and marked, and terminal fields lighted. Pilots were given an opportunity to make practice night flights. In August of 1923, a regular schedule was flown between New York and San Francisco for a period of four days, the portion of the route between Chicago and Cheyenne being flown at night. The experiment was a complete success and night flying was an accomplished fact. It could be done.

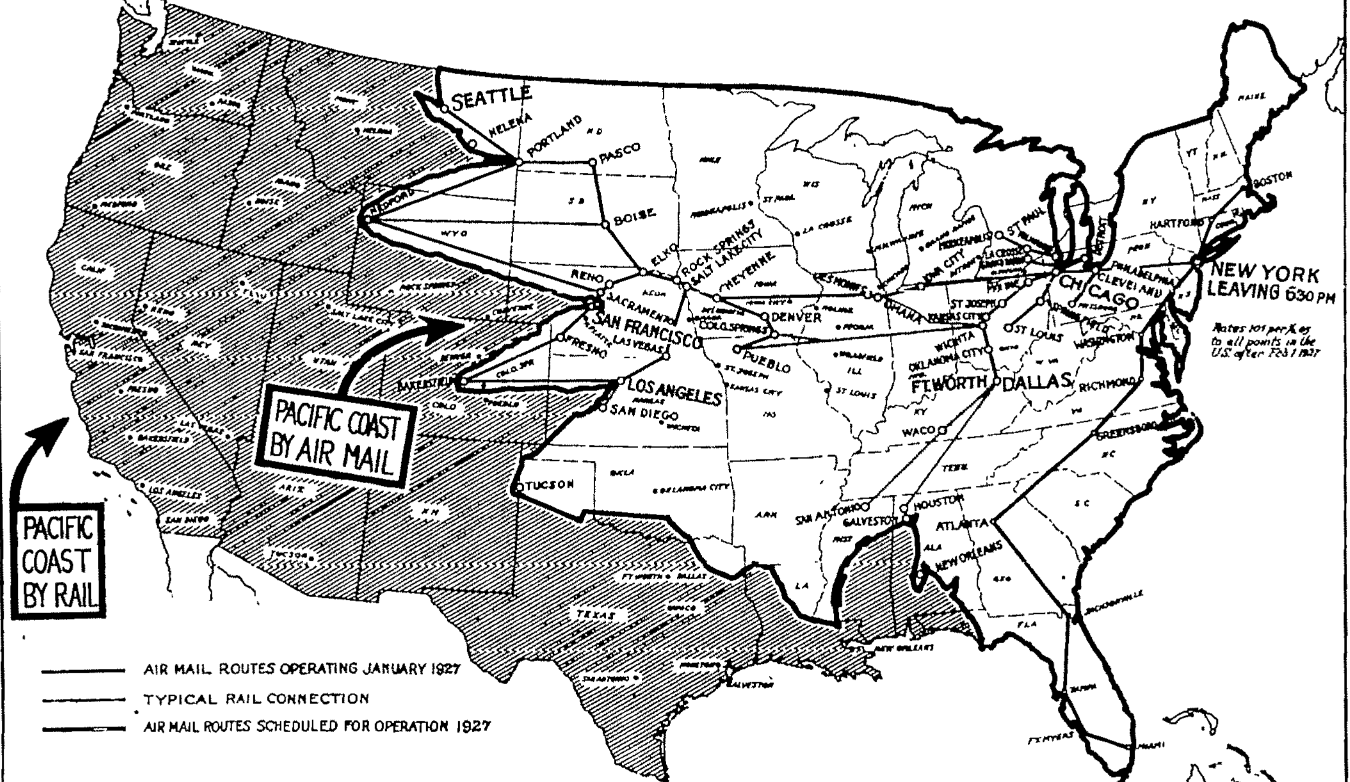
The remainder of 1923 and the first half of 1924 were spent in preparing for the inauguration of a regular transcontinental service on July 1, 1924. The service went into effect as planned and has been operating continuously since, with only slight changes in schedule, and with a performance percentage of approximately ninety-four per cent. When means are found to circumvent weather that is now impossible, a schedule approximating one hundred per cent will be possible.

Numerous changes in the lighted airway looking toward a more efficient and economical administration have been made. Additional lights have been installed, providing a powerful rotating beacon at approximately every fifteen miles.

A brief summary of the work done in connection with the inauguration of night flying will give some idea of the task. In the last half of 1923 and the first half of 1924 the following special work was accomplished: 289 flashing gas beacons were installed between Chicago and Cheyenne; 34 emergency landing fields between the same points were rented, equipped with rotating electric beacons, boundary markers, and telephones; 5 terminal landing

WHAT AIR MAIL DOES TO THE MAP!

Distances from New York Reduced in Proportion to Time Saved by Air Mail



AIR MAIL ROUTES OPERATING JANUARY 1927
TYPICAL RAIL CONNECTION
AIR MAIL ROUTES SCHEDULED FOR OPERATION 1927

COURTESY OF NATIONAL AIR TRANSPORT INC.

fields were equipped with beacons, flood lights and boundary markers; 17 planes were equipped with luminous instruments, landing lights and parachute flares. The necessary organization to handle operations both in the air and on the ground was brought up to a high degree of efficiency.

The lighted airway was extended eastward from Chicago to Cleveland in the summer of 1924; westward to Rock Springs at the same time; from Cleveland to New York in the spring of 1925; and from Rock Springs to Salt Lake City in the fall of the same year.

These last two extensions involved difficulties peculiar to the country over which laid out. The Cleveland-Chicago leg traverses the Allegheny Mountain Range, offering serious difficulty in the establishment of emergency landing fields and locations of beacon lights on mountain tops that would be both visible to a pilot flying over and accessible from the ground. The leg from Rock Springs to Salt Lake City traverses the Laramie and Wasatch Ranges of the Rocky Mountains, an area that is very sparsely settled.

QUICK COMMUNICATION SYSTEM ESSENTIAL

An efficient, quick and dependable communication system is essential to the operation of aircraft on regular schedule cross country. It is necessary to have promptly, when needed, weather reports and ship movements. The Post Office Department first tried out a leased land wire over portions of the route, but discarded it in favor of a transcontinental radio service. Radio stations are located at fifteen terminal fields on the transcontinental route. Of these nine stand continuous watches 365 days per year. Although in the past the Department has experimented with radio sets installed in planes, and pilot to ground communication has been maintained with varying success, this development has not reached a stage where it is of real practical value. However, results to date show promise, and it can reasonably be expected in the near future that this desired development will be an accomplished fact. Some aircraft operators are experimenting at this time. Besides, the Bureau of Standards of the Department of Commerce is carrying on further development work.

A forward step was taken when the Postmaster General was authorized by law to enter into contracts for the transportation of mail by aircraft. This led to the establishment of several contract lines early in 1926.

CONTRACT ROUTES

Contract routes have been established and are now in operation between Los Angeles, Calif., Las Vegas, Nevada, and Salt Lake City, Utah; Pasco, Wash., Boise, Idaho and Salt Lake City, Utah; Pueblo, Colorado Springs and Denver, Colo., and Cheyenne, Wyo.; St. Paul and Minneapolis, Minn., LaCrosse and Milwaukee, Wis., and Chicago, Ill.; Ft. Worth and Dallas, Tex., Oklahoma City, and Ponca City, Okla., Wichita, Kan., Kansas City and St. Joseph, Mo., Moline and Chicago, Ill.; St. Louis, Mo., Springfield, Peoria and Chicago, Ill.; Chicago, Ill., and Detroit, Mich.; Detroit, Mich., and Cleveland, Ohio; New York City, Hartford, Conn., and Boston, Mass.; Seattle, Wash., Portland and Medford, Ore.; San Francisco, Fresno, Bakersfield and Los Angeles, Calif. All of the above routes except the last named make direct connection with the government-operated transcontinental or New York-Chicago overnight service delivering mail to and receiving mail therefrom.

The establishment of the contract

service increased the number of people directly served by the Air Mail Service materially, and resulted in an increase in mail handled of practically fifty per cent.

Arrangements have been completed whereby the portion of the transcontinental route between Chicago and San Francisco will become contract service on or about July 1, of this year. It is expected that the portion between Chicago and New York will be let out to contract in the near future. The Post Office Department thereby will discontinue the operation of aircraft entirely.

ACCOMPLISHMENTS OF THE POST OFFICE DEPARTMENT

It is believed that the Department can, without fear of contradiction, lay claim to a number of accomplishments in the field of commercial aviation. In the first place, it has kept aviation before the public and brought many people into a closer feeling of relationship with aircraft. Secondly, the Post office Department has demonstrated that it is possible to maintain a fairly regular schedule of plane operations in all seasons, both day and night. Furthermore, a considerable portion of the American public has been convinced of the safety of air transportation. At this writing the Air Mail Service has flown approximately 2,500,000 miles since there has been a serious accident in the service. During the calendar year 1926 there was one fatal accident, and two during the calendar year 1925.

The Air Mail Service was awarded the Collier trophy for the most important contributions to the development of aeronautics in the year 1922, for the unusual record of safety established; in the year 1923 for demonstrating the practicability of night flying. Recently the Harmon trophy for the United States was awarded to Pilot Shirley J. Short of the Air Mail Service for his outstanding flying record for the year 1926.

Now that the Air Mail Service will be operated entirely by private contract, private enterprise no doubt will stimulate the use of the service and carry on the development of commercial aviation to a point little dreamed of at this time.

Aerial Photography

Its Development and Future

By Sherman M. Fairchild

President, Fairchild Aviation Corporation

WHILST aerial photography was used to a limited extent in the years preceding the World War, it owes its rapid development to the experiences gained during four and a half years of concentrated warfare. Like aeronautics in general, this branch of the active services, with practically unlimited funds at its command, made enormous progress. Naturally, commercial aerial photography profited from the knowledge so gained, and it is gratifying to observe that American aerial photographers have kept well to the fore in this particular branch of aviation.

Early Types of Cameras Used

At first, ordinary cameras with telescoping leather bellows were employed, merely reinforced with protective cones. But this makeshift arrangement was soon found to be utterly inadequate, and the need for a specially designed and constructed apparatus became at once apparent.

The second logical step was, therefore, a new type of aerial camera, hand-operated and using a plate or film magazine. Whilst admittedly giving better results than the earlier cameras, they were still far from perfect and could in no way be compared with the modern aerial camera of today.

Even until recently the great majority of aerial picture makers, enlisted in peaceful pursuits, performed a dual function. They were used for the making of "obliques" as well as of "mosaics." "Obliques" are in reality "bird's-eye" views, taken from a slightly steeper angle than when usually seen from the ground, objects in the foreground and center standing out clearly, whilst those further back show a perceptible loss of detail, due to their greater distance and the usual atmospheric haze so close to the ground. In "mosaics" all pictures are taken from a predetermined height, in a true vertical position, and thus enable the aerial photographer to assemble a complete map of the territory under observation, by joining the individual photos "shingle"—fashion. That is called "aerial mapping." As can readily be imagined this procedure, which depended entirely upon the constant alertness of the observer-photographer, sometimes left gaps between adjacent exposures of film, so that frequently a new set of pictures had to be taken, in order to complete a mosaic.

The Latest Military Model *K-8*

The need for a camera which would automatically produce a series of consecutive and overlapping photographs entirely independent, if possible, of the human element, led the Fairchild Aerial Camera Corporation of New York to develop a "fully-automatic" aerial camera, known as the Military Model *K-8*. This is considered the greatest forward step, since the incipiency of aerial photography.

No longer need an observer-photographer be carried. This new camera may now be installed in a fast single-seater pursuit plane. Merely the "twist of the wrist" in setting the dial of the intervalometer on the instrument board, enables the pilot to "shoot" an entire city from an altitude of six miles, unheard and unseen.

Briefly, the camera is mounted in the plane with the lens pointing downward through an opening in the fuselage. The elevation at which the plane must be flown is determined. To instance an example: If the area under observation is to be mapped on a scale of 800 feet per inch, and a lens of 20-inch focal length is employed, multiplication of the two factors (800 × 20) gives the altitude in feet which the plane must maintain (16,000 feet).

The pilot outlines upon U. S. Geodetic Survey sheets the area to be covered and also marks the guide or flight lines. According to this marked map the "job is flown." The pilot flies back and forth along the guide lines, making "strips," until the full area has been covered.

The photographic film is covered by exposures 7½ by 9½ inches each, the larger dimension forming the width of the film. However, the net effective area of each exposure is only about one-fifth of the picture. This is because only the center part is truly vertical, while the marginal objects appear slightly oblique. Hence the photographer times the consecutive exposures so that they overlap "shingle"—fashion by about sixty per cent, and the pilot plots his flight lines so that the strips overlap nearly fifty per cent.

The overlap also permits of stereoscopic study of the terrain, which adds the third dimension, so indispensable to the correct interpretation of many objects on the ground.

With the completion of the photography the air work is done, and the films, after developing and printing, go to the mapping department.

AERIAL MAPPING

The mosaic or aerial photographic map is assembled by first plotting certain survey points upon a large board, and then superimposing selected sections of aerial photos, after they have been carefully corrected to scale. This master map is then re-photographed in large sections, from which any desired number of copies may be made. Enlargements up to four diameters may be made to bring out certain details, without perceptible loss of definition.

The practical applications of aerial mapping are manifold, indeed. Hydraulic companies are having their watersheds surveyed by this method. Nearly all the larger light and power companies have had their transmission lines plotted from the air. Congested territories all over the country, composed of multiple city groups, are being mapped for regional planning. Several states are contemplating aerial mapping of their entire commonwealths.

USES FOR AERIAL MAPS

The many uses for aerial maps are practically unlimited. From them the hydraulic engineer can locate potential power sites. The department of forestry can interpret them accurately, locate fire towers, mark fire lanes, and apportion ranger patrols. The lumberman will quickly spot denuded areas, where acres of stumps and dry brook beds demand reforestation. State highway departments will now be able to plan speedily and accurately new main arteries. From these maps the agricultural departments can figure the percentage of land under cultivation, mark waste lands for reclamation, and thus assure maximum agricultural efficiency for the entire state. The problem of adequate water supply for large metropolitan areas will be solved by the most intensive study of aerial maps for the logical locations of future reservoirs and basins.

Individual cities and towns also benefit greatly from aerial maps, their various departments adapting them to their respective needs. In this manner the board of education may locate ideal sites for schools, to suit the ever changing population. The police and highway departments can solve their traffic problems better. A single glance will show the necessity of widening certain thoroughfares at strategic points, determine better parking facilities for motor cars, plot layouts for new streets and boulevards, and tell, without visiting the location, whether or not property values make condemnation proceedings prohibitive. The board of tax assessors can conclusively point out the factors of improvement which helped to increase the value of a citizen's property. The city planning and zoning departments can do their work more rapidly and intelligently, because all factors pertaining to their particular problems are registered photographically and to scale, covering the entire city. The police, fire, water and sewer departments find these aerial maps of inestimable value in their many daily tasks.

The city engineer welcomes them to elucidate his projects, and to save a good deal of field work, thanks to the exact reproduction of the terrain under survey. Gas, electric and telephone companies find these maps indispensable in solving their problems of distribution.

Aerial photography has also played a major part on scientific expeditions, and was employed with marked success on Dr. Alexander Hamilton Rice's trip through virgin territory into Brazil along the Amazon River.

New possibilities for the application of aerial photography are presenting themselves as the industry develops. Even long before aerial mapping was perfected, oblique aerial photographs were used for advertising, real estate developments, etc. They are naturally more easily interpreted than a vertical map, for oblique views are pictures such as our eyes are accustomed to gaze upon from high buildings, mountains, or other points of vantage.

Pedagogues and authors of textbooks, especially those on geology, geography and history, have used aerial photographs for illustrations. Present indications are that this type of illustration in teaching will probably cause a great many of our schools and colleges to employ more and more aerial pictures and lantern slides in the future.

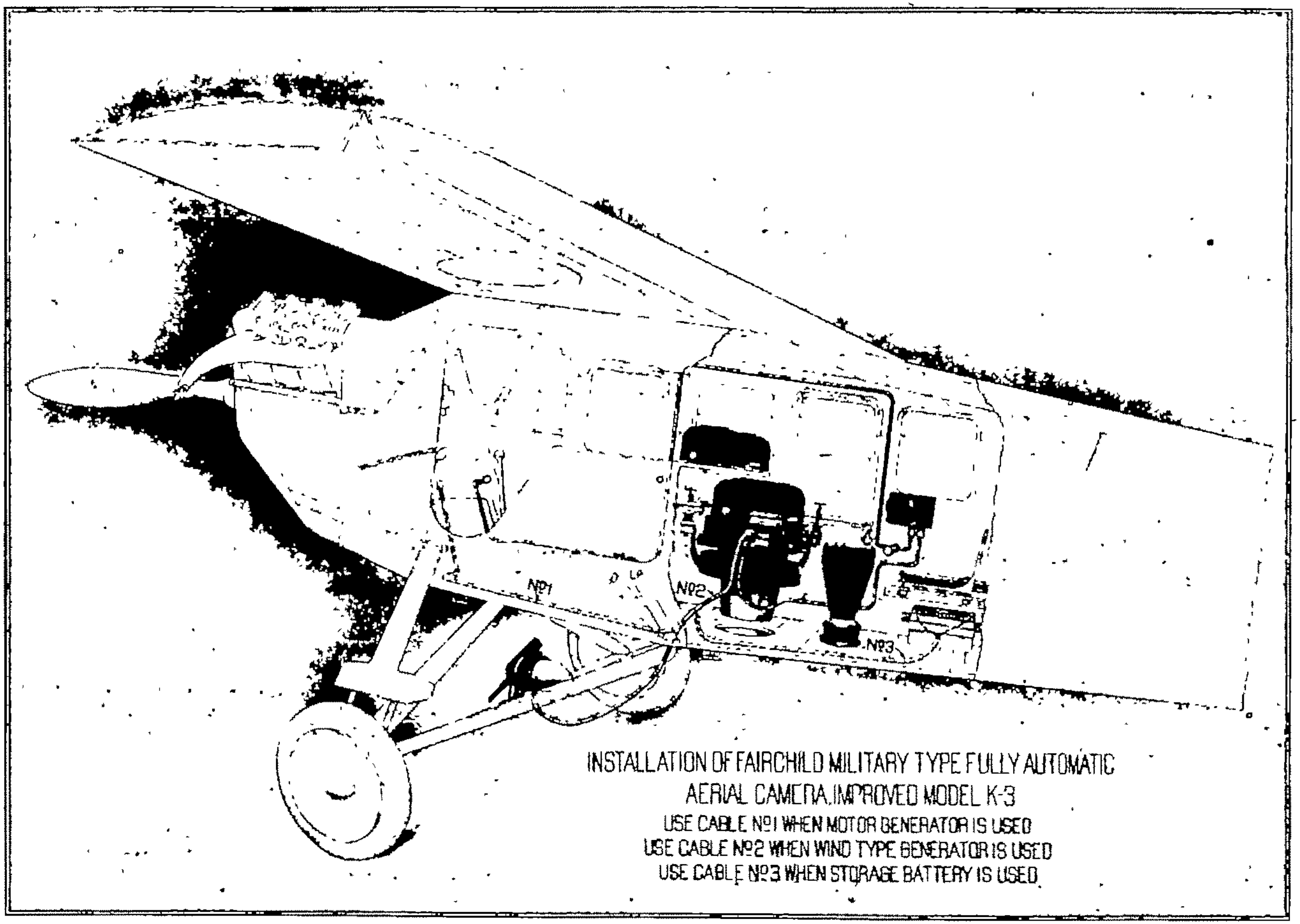
Captains of industry have been quick to realize the accuracy of aerial pictures for plant layouts. In several instances, aerial photos have been accepted in court of law as conclusive evidence.

The painting of aerial pictures in natural tints has opened a new avenue of sales for the decoration of homes, clubs and business offices.

While in the past individual municipalities have contracted for aerial surveys for city planning and zoning, tax, parkway and traffic studies, entire counties were mapped in 1926. This is a fair indication of public needs for regional planning, rather than individual municipal problems. The next few years will see entire states mapped from the air, at a considerable saving of time for the surveyors, and a great saving of money for the taxpayer.

THE CAMERA IS CONSTANTLY IMPROVED

In aerial photography, as in any other line of business, supply, both in kind and in volume, is controlled by demand. And if the present day demand seems to lie at least partly in the direction of greater personal comfort and efficiency for the surveyor and the public, the aerial photographer may consider the situation something of a compliment to himself. Presumably he has gained a lap in the race and now he may catch


INSTALLATION OF FAIRCHILD MILITARY TYPE FULLY AUTOMATIC
AERIAL CAMERA, IMPROVED MODEL K-3
USE CABLE Nº1 WHEN MOTOR GENERATOR IS USED
USE CABLE Nº2 WHEN WIND TYPE GENERATOR IS USED
USE CABLE Nº3 WHEN STORAGE BATTERY IS USED
Nº1
Nº2
Nº3

Typical Installation of Fairchild Military Automatic Aerial Camera

The camera may be seen in the center, with a spare magazine above it. At the right is the view finder, whilst the intervalometer is his breath. As a matter of fact, however, he isn't resting. Eternal vigilance, he knows, is the price of progress; and he's busy.

He's busy, specifically, at the task of fitting the aerial camera more accurately to the present-day needs. Aerial photography is increasing in volume; the demands made upon it are becoming more stringent. The situation demands—and the future will continue to demand—aerial maps that are accurate and to scale, maps that may be enlarged several diameters without perceptible loss of detail. The engineer demands—and will continue to demand—an aerial camera that will be absolutely automatic, a camera that will "handle" easily, a camera whose operation insures a maximum of safety and a minimum of muscular and mental effort.

And so the aerial camera manufacturer, to whom demand always stands as a challenge, is busy. He's busy in many different directions and at many spots in the camera's anatomy. He's busy with old problems and with new ones.

The outstanding accomplishment in aerial photographic picture makers is the Fairchild Automatic Recording Camera. Used as standard equipment by the U. S. Air Services, the Royal Canadian Air Force and numerous foreign governments, this camera is almost human in its action, and does what no other camera can do at this time.

On a strip of 75 feet of film it will take 115 consecutive exposures, 7 by 9 inches in size, and all the pilot has to do is to set the intervalometer on his instrument board in the plane, and the camera does the rest. In other words, no additional observer-photographer is needed, and, in addition to the aerial picture under observation, complete engineering data, such as the time of the exposure, the focal length of the lens, the serial number of the camera, number of exposures, the altitude and level of the camera, and any written notes the pilot may add are permanently and accurately recorded.

In this manner the element of human errors has been completely eliminated. Extra film magazines may be slipped in position in less than five seconds, and twice the area may now be mapped without stopping the camera mechanism. With one single loading an area of 180 square miles may be accurately mapped from a height of 10,000 feet.

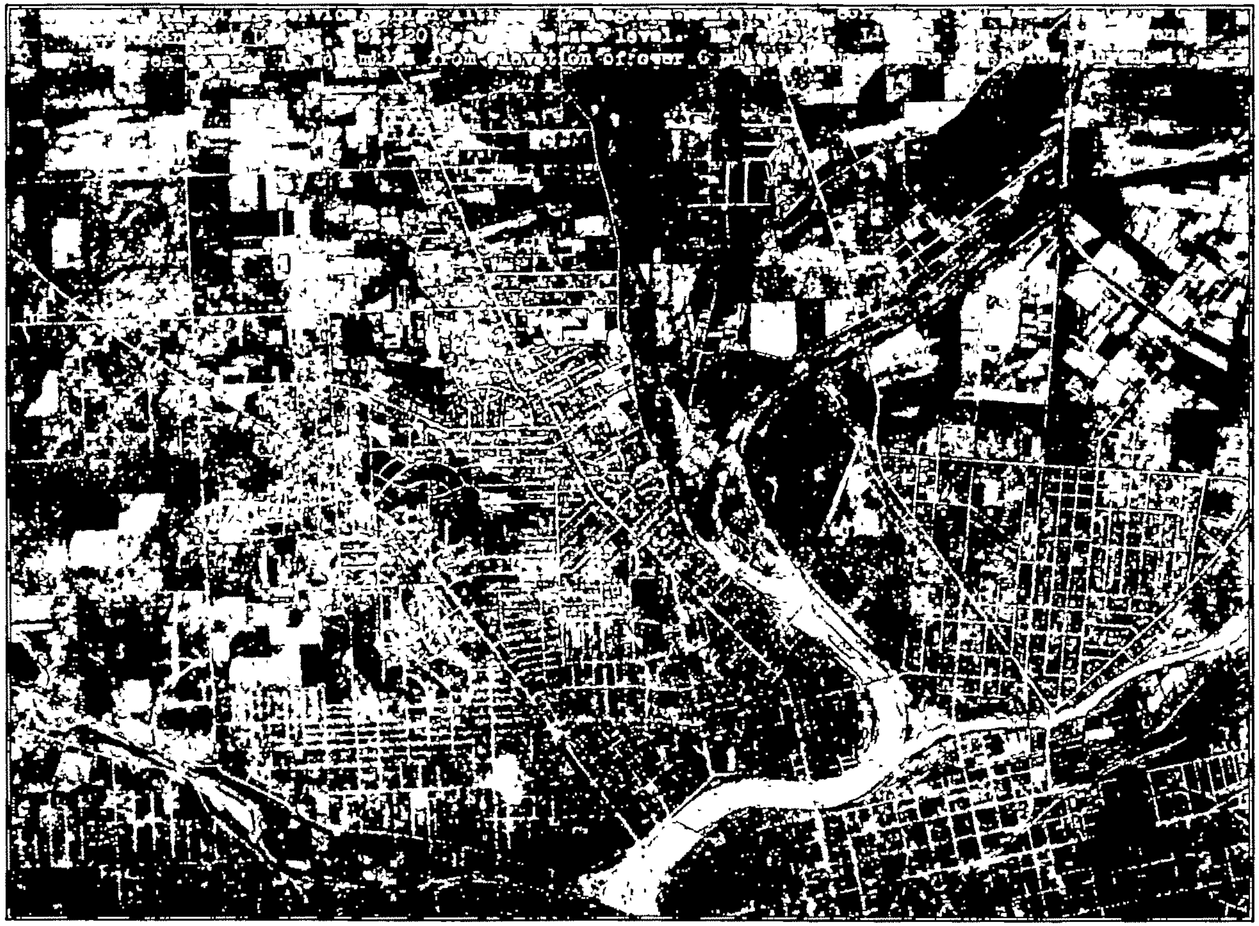
The "between-the-lens" shutter, in addition to perfect light distribution over the entire film face, assures greater speeds, and is absolutely unaffected from the vicissitudes of climatic extremes.

It is significant that two U. S. Army aviators, not so long ago, established a photographic altitude record by ascending to 32,200 feet, and taking a photograph of the city of Dayton, Ohio, from a height of six miles, covering an area of nineteen square miles on a single exposure, 7 by 9 inches.

The ultimate possibilities of photographic apparatus, for the mapping of the ground beneath from such altitudes, with the plane—unseen and unheard—haven't even been fully realized. The importance of scientific aerial photography for martial and commercial pursuits will constantly increase, as time goes on, and more rigorous demands are made upon creative genius to supply that demand.

At this stage the future scope of aerial photography cannot even be forecast with any degree of accuracy. Time alone will tell.

Needless to add, such specialized equipment as a modern aerial camera requires special flying equipment, in



U. S. ARMY AIR SERVICE HIGH ALTITUDE PHOTOGRAPH

Shot with Fairchild Military Aerial Camera from a height of 32,220 feet above sea level, May 2, 1924, by Lieuts. Macready and addition to highly trained personnel, in order to assure satisfactory results. The demand by the services and the public for a high-grade combination of aerial mapping equipment, caused the Fairchild organization to develop a special mapping monoplane, adapted to the requirements of the Fairchild Aerial Camera, thus insuring a harmonious ensemble.

Airports and Landing Fields

By William E. Arthur
President, William E. Arthur & Co., Inc.

WITH the steady growth of commercial aeronautics, and the establishment of airways criss-crossing the United States, the necessity for well designed airports becomes apparent. The city without an airport will be in the same class as a coastal city without a well-equipped harbor.

Cities and nations, like individuals, achieve material progress in proportion as they possess pioneering minds and the courage to make plans and follow them through.

The genius of America has been in the ability of its people to sense the trend of development, and to brave temporary inconvenience for the larger benefits towards which they aim. Few of our national undertakings have been able to offer immediate profit, and none of them have failed to be enormously profitable in the end.

In our generation we have seen the automobile emerge from a thing of ridicule to revolutionize land travel and transportation. Perhaps to no other one thing does the South owe its present prominence in national affairs than to this mechanical infant of yesterday.

In this generation, also, another great factor has come into the life of the nations—men have learned to fly.

Urged by influences far greater than behind any other national venture, the airplane hovers over our cities today, asking the hospitality of safe landing fields. Backed by industrial and social need, these ships of the air have not found pioneer spirits lacking to develop and fly them, nor can communities refuse their service, and continue to retain their place in the industrial competition, which is sweeping forward in a test of civic strength and the right of communities to commercial life.

Within the last twelve months commercial aviation has emerged from the obscurity of doubt and uncertainty to a condition of fact which challenges the attention of all. We stand upon the threshold of an era of flying.

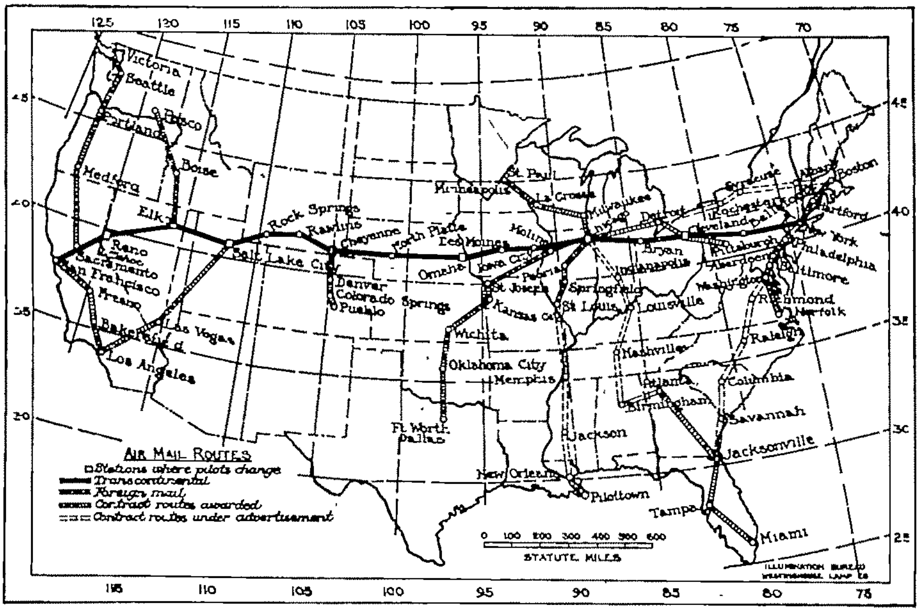
Given some place to start from, some place to go to, and a route over which to fly, an airplane will develop air traffic as well as help develop the cities and communities between which it flies.

Air Lines

Cities throughout the country are rushing to provide airports in which they are making investments of from $15,000 to $1,000,000 and more. These airports, according to governmental plans, will be linked together in a network of lines, criss-crossing the country, and, according to the War Department's published plans, covering a straight-away line of more than 50,000 miles. Air mail lines are taking form, and the pioneer lines, of course, will witness the greater developments, due to the fact that during the further educational period necessary to fully develop public demand, the cities not early providing themselves with airports will find it difficult thereafter to secure the services of air transport companies because of competition with parallel lines.

On May 20, 1926, Congress passed the Air Commerce Act, definitely committing the United States government

THIS MAP SHOWS VARIOUS AIR ROUTES NOW IN OPERATION OR CONTEMPLATED IN THE VERY NEAR FUTURE



MAP OF NEW AND PROPOSED AIR TRANSPORT ROUTES, DECEMBER, 1926

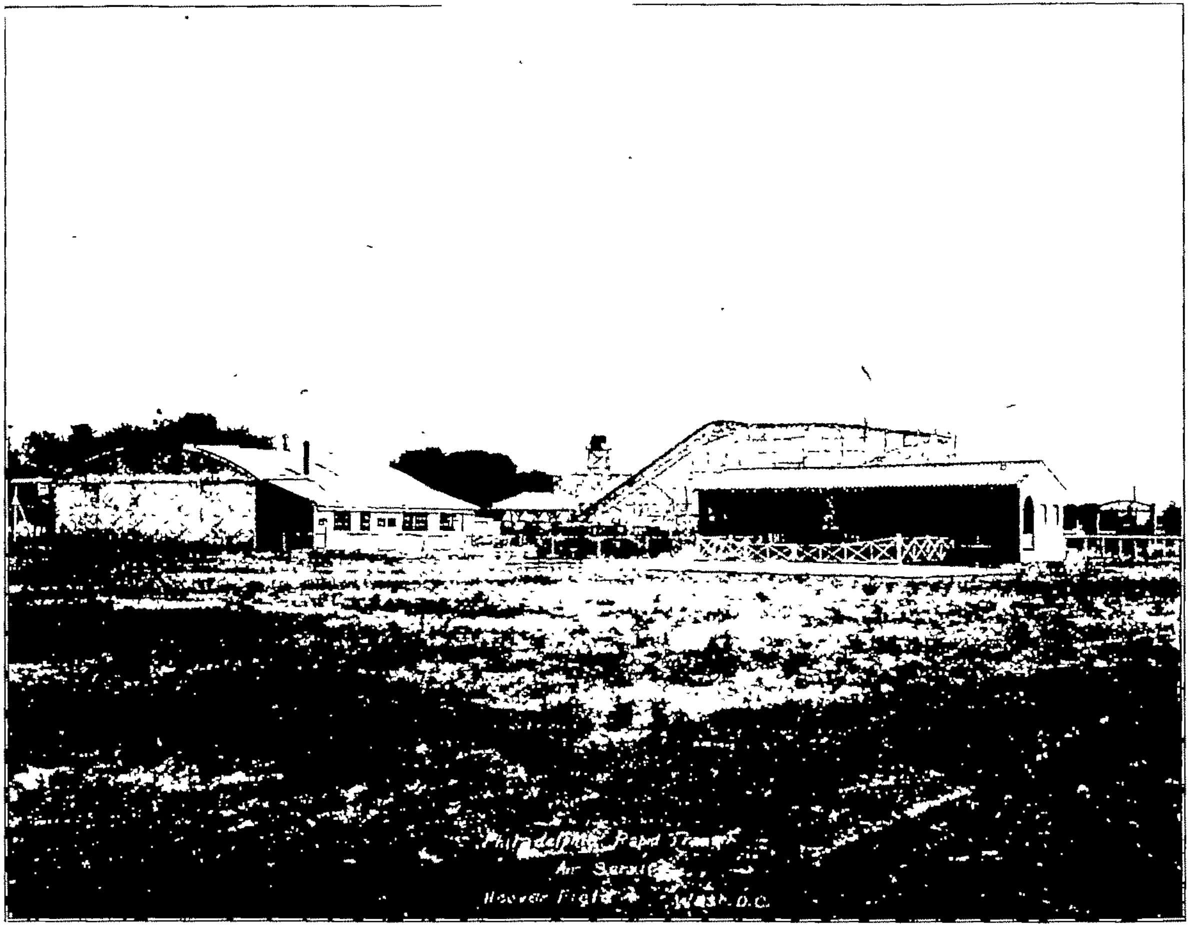
to encouragement of air transport and passenger lines, and setting up a new department within the Department of Commerce, the whole time of which will be devoted to the promotion of airways. Under the auspices of this department, the following seventeen lines are now in operation, with four additional lines to be immediately provided for:

Government:

1. Transcontinental, 2665 miles, Post Office Department.
2. New York-Chicago, night mail, 770 miles, Post Office Department.

Private Contract Air Mail:

1. Boston-New York, 220 miles, Colonial Air Transport.
2. Chicago-St. Louis, 277 miles, Robertson Aircraft Corporation.
3. Chicago-Dallas, 995 miles, National Air Transport.
4. Salt Lake City-Los Angeles, 589 miles, Western Air Express.
5. Pasco-Elko, 424 miles, Walter T. Varney.
6. Detroit-Cleveland, 91 miles, Ford Motor Company.
7. Detroit-Chicago, 278 miles, Ford Motor Company.
8. Seattle-Los Angeles, 1073 miles, Vera C. Corst.
9. Chicago-Minneapolis-St. Paul, 384 miles, Northwest Airways, Inc.
10. Atlanta-Miami, 740 miles, Florida Airways Corporation.
11. Cleveland-Pittsburgh, 115 miles, Clifford Ball.
12. Cheyenne-Pueblo, 200 miles, Colorado Airways.
13. Seattle-Victoria, 78 miles, Edward Hubbard.
14. New Orleans-Pilottown, 80 miles, Robertson Aircraft Corporation.



HANGAR AND PASSENGER STATION AT HOOVER FIELD, WASHINGTON, D. C.

Constructed for the Philadelphia Rapid Transit Air Service. This is the first modern air passenger station constructed in the

Flood Light. Type Used for Illuminating Field for Night Landing

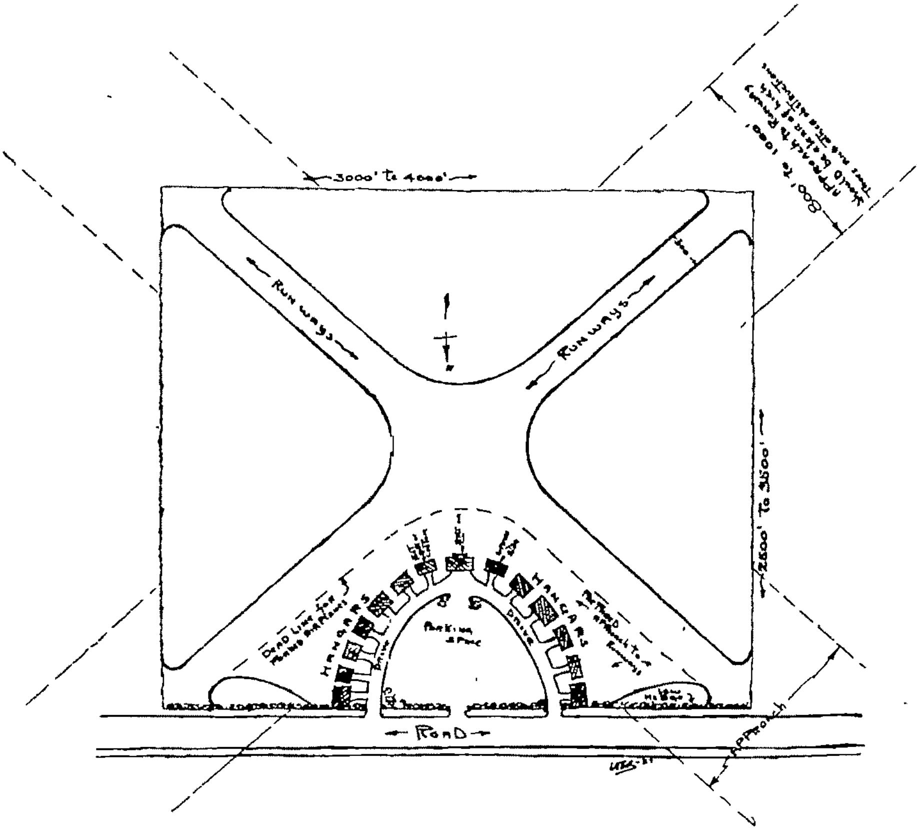


FIGURE 1—DIAGRAM OF A MODERN AIRPORT DESIGNED BY WM. E. ARTHUR

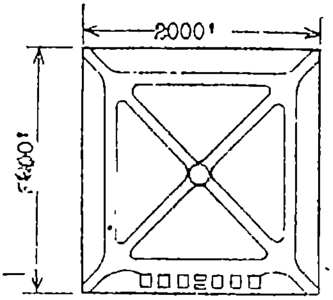
15. Philadelphia-Norfolk, Philadelphia Rapid Transit Air Service.
16. Detroit-Grand Rapids, 140 miles, Stout Air Service.
17. Atlanta-New York, 773 miles, Pitcairn Air Lines.

The government proposes to furnish intermediate landing fields and light beacons between terminals, so as to make possible night flying between airports which the cities are expected to provide. The intermediate fields will be located approximately 20 miles apart; a tremendous lighting program is anticipated, and many other means of assisting the air navigator will be provided by the national government.

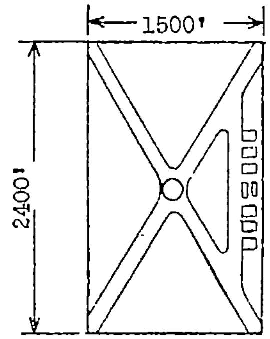
SELECTION OF SITE

In the selection of sites there are several important factors to be considered, and it is very important that these be properly balanced with careful consideration to orientation of site, provision for expansion, soil and drainage, transportation, communication (radio, telephone, telegraph, etc.), building arrangement and construction, and field lighting for night flying.

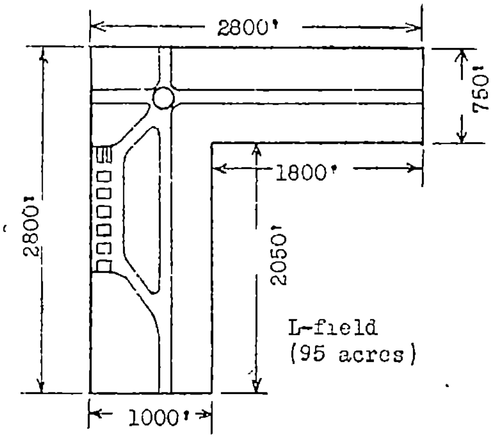
Figure 1 illustrates the ideal modern airport as designed by the writer, which indicates the cross runways of approximately 3000 feet in length, and about 200 feet or more in width, and also shows ideal locating of hangars and other buildings. However, there



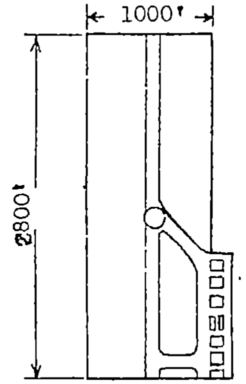
Square field
(92 acres)



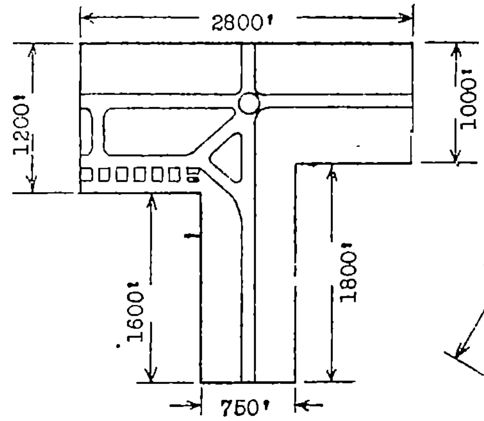
4 way rectangular field
(83 acres)



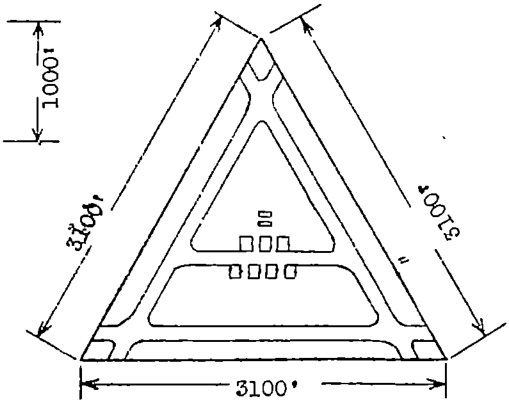
L-field
(95 acres)



way rectangular field
(69 acres)



T-field
(95 acres)



Triangular field
with central buildings
not recommended
(96 acres)

FIGURE 2—TYPES OF LANDING FIELDS WITH 2800′ RUNWAYS

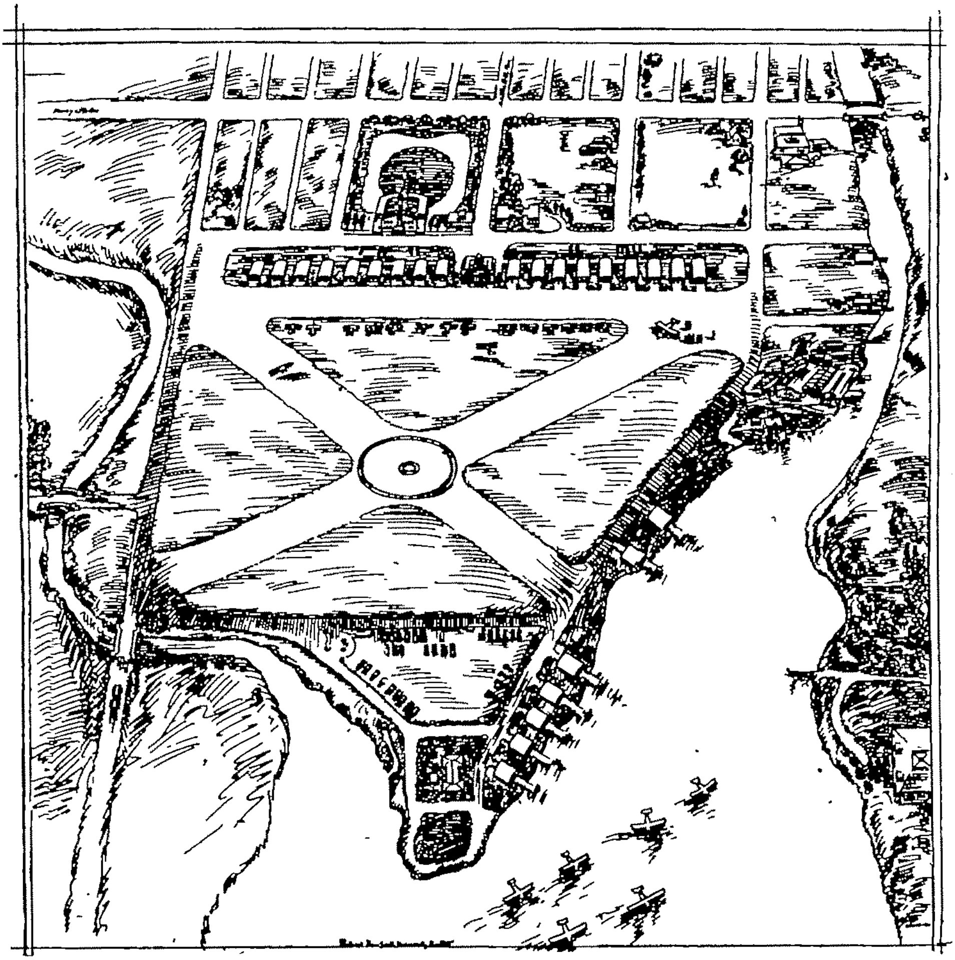
are many cases where a field of this type would be impossible. Where such is the case, the main requirement to be observed is that the field shall be of sufficient size to permit the efficient operation of all types of commercial planes, at the same time anticipating for the future.

Figure 2 illustrates several types of landing fields.

LAYING OUT OF AIRPORT

After the field has been selected, and the direction of the prevailing wind determined, the next step is laying out the runways. The runway, a specially prepared strip for planes to land upon, is a necessity in any field where other than very light traffic is expected. Thick, tough sod will sometimes be sufficient, even in rainy weather, but this must be solid enough to resist three times the weight of planes, the average stress at the moment of landing.

Runways should permit of four-way landing if possible, or the next best combination as indicated. After the layout has been decided, the runways should be constructed, using cinders, slag, or other suitable material, tamped



PROPOSED NEW YORK UNIVERSITY AIRPORT

down sufficiently to present a uniform surface, but not enough to prevent drainage. As previously mentioned, the runways should be as long as possible, not under 3000 feet, and free from obstructions at each end. The minimum satisfactory width should be about 200 feet.

If the field is of sand or gravel, it will drain naturally, otherwise, artificial means must be used, such as ditches flush with the surface. When such ditches are required to drain the runways, they must be filled with stone or coarse gravel to the cinder level, the smaller stones tamped down at the top so that landing gear will pass over smoothly, and yet maintain good drainage.

Every added foot of runway length makes for added safety.

Lighting for Night Flying

All airports should be properly lighted in such a way as to indicate location of field to pilots, and flood-lighted to assist in landing and takeoff of planes. Types of this lighting are included in the following:

Beacons that throw sharp long beams of light which revolve in the sky, acting as aerial lighthouses to the pilot.

Boundary markers that are small, sharp, contrasting, and sometimes flashing lights.

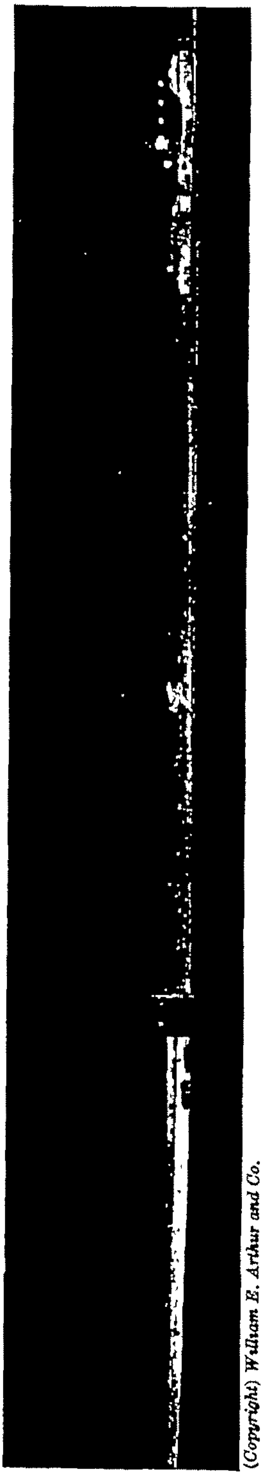
Red lights, indicating that there are obstructions and dangers to be avoided, such as telegraph poles, trees, houses, towers, etc.

Green lights indicating approaches to runways.

Buildings on the field flood-lighted to give the pilot a perspective, thus enabling him to judge his height better when approaching the field.

Flood-Lighting

There are many types of flood-lighting, but the most satisfactory to date



(Copyright) William E. Arthur and Co.

A Very Interesting Photograph of Hadley Field, the New York Terminal of the U. S. Air Mail Service

This photograph was taken by William E. Arthur at 9:45 p m. on the night of Tuesday, Jan. 12, just as the mail plane was taking off for Cleveland. The flood light just does not appear in the picture, being on the extreme left. The boundary lights are clearly visible. The fact that these are flashing lights is the reason for the one appearing in the left hand portion of the picture being apparently extinguished, while another, the one just behind an automobile in the right hand half of the photograph, appears to be dimly lighted.—Reprinted from February 1, 1926, issue, "*Aviation.*"

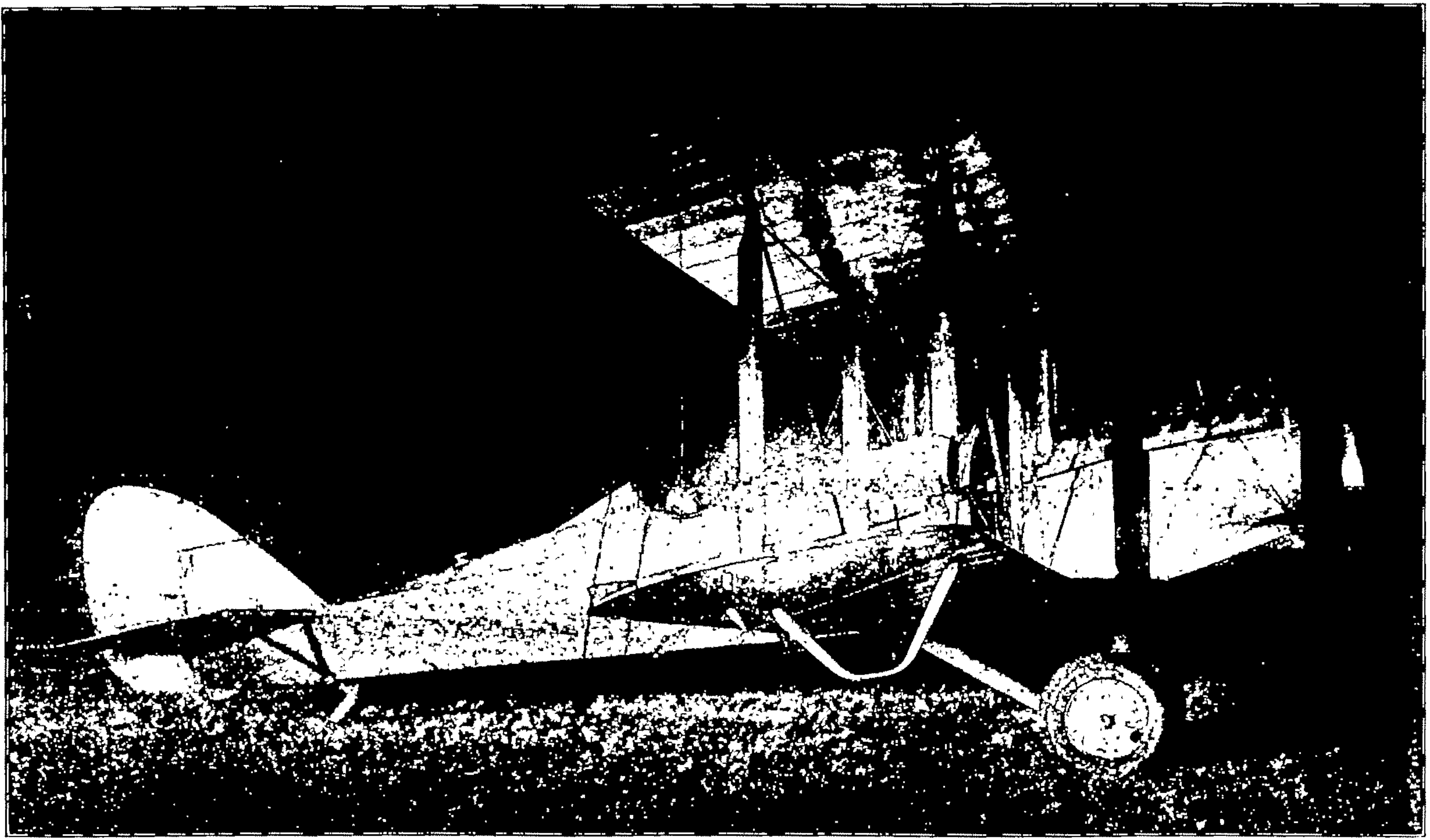


Photo of Air Mail Plane Taken by Illumination from Flood Light is the type with the large Dioptric lens with a high tensity ark, which throws a light in all directions to the ground in such a way that the entire field is illuminated like day, and in a way that no stray light is inclined upward to blind the pilot in approaching the field.

BUILDINGS

The buildings of an airport should usually consist of:

1. A station to accommodate passengers, waiting room, baggage room, ticket office, telephones, telegraph, wireless station, meteorological station, control room for controlling the movement of ships at the field, etc.
2. Field Post Office and Custom House building.
3. Freight and express building.
4. Necessary hangars for different operating companies on the field, also public hangars to accommodate planes over night, much on the same order as automobiles are stored nights at garages.

Space should also be provided for parking of automobiles and buses which arrive at the field.

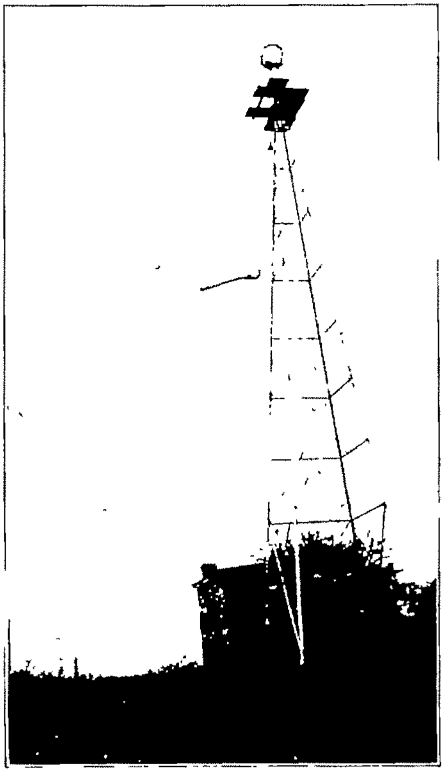
Of course the type and number of buildings required depend on the size and activities of an airport.

COST ANALYSIS

With all this talk of airports and their equipment, the cost of airports to the different cities seems to be an important factor.

The following cost data was tabulated recently by the Department of Commerce, Aeronautics Division:

Accurate analysis of airport cost per acre is at present impossible because of the small amount of data and the divergent standard of construction and improvement. Land values vary in different parts of the country, and according to the proximity of the airports to the cities. In some cases the cost of leasing ground has been computed by cities as a maintenance factor. In others no check has been made on maintenance. The unit cost per acre is, therefore, only a rough approximation. However, this is the best information to be had until more airports can be considered.



TYPE OF AERIAL LIGHTHOUSE USED ON THE TRANSCONTINENTAL NIGHT ROUTE, WITH 24-INCH REVOLVING BEACON

In the following tabulation are shown the data received from seventeen airports. As these ports are located in widely separated parts of the country it is probable that each case will serve as a basis for calculation for some city similarly situated.

The value given in column 3 is the actual amount paid for the land or the assessed value. The cost of putting into shape, indicated in column 4, has been determined differently by each city, but the improvements represented are briefly discussed in the text following the tabulation, so that a proper undertasnding may be had.

City and Name of Airport	*Acres*	*Value*	*Cost of Putting into Shape*	*Maintenance*	*How Bought*	*Sheds*	*Shops*	*Length of Runways (Feet)*
Phoenix, Ariz	160	$36,000	$3 600		By city funds	0	0	2,320
Tucson, Ariz.......	80	$8,000	$6,800	$625	Same	1	..	Square
Los Angeles, Calif .	80	$110,000	$10,000	......	Field is city land	2	No not given	3,500
Hartford, Conn. ..	107	$80,250	. .	$11,500	By city funds	3	Same	Square field
Atlanta, Ga . ..	30	....	$25,000	....	Leased	0	0	2,500 (Triangular field)
Portland, Me .	54	$20,000	.	. ..	Private Owned	0	1	2,000 east and west
Boston, Mass . .	40	$1,000,000	$50 000	.	State	4	Military	1,500 in T-form
Battle Creek, Mich	150	$40,000	. . .	Leased at $500 per year	Leased	1	Inhangar	2,200 by 1,100; 2,400 by 1,200
St Joseph, Mo ...	141	$63,140	$40,400	$3,000	By city funds	1	Same	Four way field
Philadelphia, Pa....	125	$125,000	$15,000	.	Conversion city ground	2	..	3,600 by 1,800
Pittsburgh, Pa.	40	$36,000	$113,000	. ....	By city and country	2	.	. ..
Cincinnati, O ...	207	$56,050	$25,000	.. .	Donated	2	1	Three 6,000 ft
Cleveland, O ..	700	$1,250,000	..	$20,000	By bond issue	8	3	4,000 ft. square
Muskogee, Okla....	...	$30,000	$19,500	.. ..	Leased	1	1	. .
Fort Worth, Tex. ..	175	$131,250	.. .	Lease cost $1,250 per yr.	Leased with option	..	..	1,000 by 2,000
Pasco Wash	160	$4,958	$2,560	.....	Leased by county	1	1	3,000 by 1,700; 250 by 1,000
Buffalo, N. Y. .	520	$411,000	$203,000	......	Bond issue	3	1	Cinder. 100 by 2,000

Phoenix.—The site for the Phoenix Airport was purchased by the city from general funds. It is under direct municipal management, and is open for all planes. The maintenance cost is borne by the city. The field is located seven miles from the city on a paved road, and is in charge of a caretaker. Half of the 160 acre field, not used at present, may be utilized when traffic warrants.

Tucson.—The Davis-Monthan Airport site was purchased by the city from municipal funds. The city leases the port to the Army Corps at one dollar per year. Eighty per cent of the maintenance cost is borne by the city, the remainder by the Army. The city is about to establish a larger field, total acreage 1280, on land leased from the Department of the Interior.

Los Angeles.—The Los Angeles Airport is situated on land controlled by the City Park Board, and is maintained by the organization. Sheds were supplied by the Army Air Corps. The equipment was put in order by the California National Guard, which also assists in maintenance.

Hartford.—Ninety-six acres of the Hartford Municipal Airport site were obtained for aeronautical use by conversion of city property, and nine acres were obtained by purchase. The city has an option on another plot of 434 acres and is negotiating for 16 more. The airport is under direct City management, and all maintenance cost is borne by the city and state.

Atlanta.—The city of Atlanta has acquired 300 acres from a private estate, by means of a five-year lease, with option to purchase at one-half the real value, which option will probably be exercised. Two hard surface roads lead from the field into Atlanta, which is eight miles north.

Portland, Me.—Stroutwater Field is privately owned and operated. The expense of constructing the runway and the shop was borne by pilots and other individuals interested in flying.

Boston.—The site of the Boston Airport, available for sea planes also, is state land. The Army and Navy lease portions but the field is open to all planes, and space is available for lease to private enterprises. The

Federal Government, the state, city and public subscriptions provided money for improvements.

Battle Creek.—The Battle Creek Airport is situated on land leased until 1929 with option of purchase. The maintenance cost is borne by local interests and civic organizations.

St. Joseph, Mo.—The Rosecrans Municipal Air Field is located on land purchased by the city from general funds. The maintenance cost is borne by the city.

Buffalo.—The site of the Buffalo Airport was purchased by the city through issue of bonds. It is directly managed by the air division, Department of Parks and Public Buildings.

Philadelphia.—The site of the Philadelphia Municipal Field was obtained by conversion of city property and condemnation of additional ground. It is managed by a board of control, representing the city, state of Pennsylvania National Guard, and the concessionaire.

Cincinnati.—The land for the Lunken Airport was deeded by Mr. E. H. Lunken, to Lunken Airport, Inc., a Cincinnati corporation. The corporation leases part of the field for Army use at one dollar per year. Lights to aid night landing in emergency have been installed.

Cleveland.—Cleveland Airport is located on land purchased by bond issue, and maintained by the city.

Muskogee.—Hat Box Field is situated on a 60-acre plot, of which 40 acres are leased and 20 acres are used by special agreement. The Army leases and maintains the field, but any licensed pilot may use it under permission from the commandant.

Pittsburgh.—Rodgers Field is located on land jointly owned by the city of Pittsburgh and the county of Allegheny. The Army Air Corps leased it at one dollar per year for training purposes. It is open to the public, as it is a municipal airport, although commanded by an Army officer. Maintenance is by the city and county.

Fort Worth.—The Fort Worth Airport is situated on land leased for four years with an option to purchase. Maintenance is by the city.

City budgets run into many millions of dollars; these millions in turn are collected as taxes from the city's commercial activities and wealth produced by them. Exceptional transportation facilities always balance the budget by rise of taxable values. Conversely, a city cannot sustain itself unless it keeps abreast of the times and grows in commercial importance with the years.

American Air Transport

By Archibald Black

Air Transport Engineer and author of *Transport Aviation*

AIR transport originated with the start of operations of the DELAG airship line, connecting several cities in Germany from 1910 until the start of the World War in 1914. These promising operations were suddenly terminated by the commandeering of the air fleet for military purposes immediately upon the opening of hostilities, and this particular activity has not yet been resumed, mainly through the restrictions placed by the victorious allies upon German airship construction and only recently lifted. While the German operations formed the first scheduled airline and the first application of *airships*, the earliest practical application of the *airplane* to civil transport took place with the origin of the United States Air Mail Service in May, 1918. Shortly after the close of the World War, numerous airplane services were started in all parts of the world, including the United States as well as foreign countries. Most foreign countries at once adopted a policy of subsidizing these services, a practice which has always created opposition in this country and which was consequently not adopted here. As a result of the different policies, foreign air services grew faster than our own for several years, but their growth, being forced has been more artificial and perhaps less healthy.

The American Policy on Subsidies

While foreign nations were content to take civil aeronautics as a suckling babe which required some considerable nursing, we took the position that it must carry itself if it was going to stay. This made for more constructive and healthier growth, but it brought with it slower development, rather unpleasant growing pains, and forced many heroic operators to the wall through the slow growth of traffic. However, such operators as Aeromarine Airways did much to pave the way for the developments which are today following. The continued expansion of the United States Air Mail Service as a government operated route has seldom, if ever, been objected to, even though accompanied by a heavy deficit year after year. It was recognized that this service was greatly speeding up communication, and that it could do much to pave the way for private operations by developing air routes, creating a demand for air mail, and encouraging private operators to enter the field. The Service has always been accepted as a gigantic flying laboratory and it has fulfilled this task excellently. With the placing of scheduled night flying upon a practical basis a few years ago, it became recognized that we were approaching the time for gradual transfer of activities from the Post Office Department to private capital.

Developments of 1926 and 1927

The passage of a federal law, permitting the Postmaster General to contract for carriage of mail by air at higher rates of postage, gave an added push to the natural course of development and spurred on several firms to enter the field. As a result, the year 1926 saw tremendous development in the operation of scheduled air transport activities in the United States, the scale of operations towards the end of that summer exceeding those of any other country in the world. This complete reversal of the conditions of a few years previous is not fully appreciated even yet, as many of the operators have confined their first activities to the carriage of mails. Those accustomed to judge air transport solely by the number of passenger carrying routes, most naturally failed to appreciate the magnitude of American operations when all of our mail routes are included. However, many of the operators who began by carrying only mail are now extending their services to include packages and passengers also. This spring National Air Transport Incorporated begins operation of the first express package airline operated under contract with the American Railway Express, the route running from New York, through Chicago, to Dallas, Texas, and serving not merely the towns actually on this line but many of those placed some distance to one side of it.

EXTENSION OF PASSENGER SERVICES

While only eight operators carried passengers last year, several others are planning to enter this field and the summer of 1927 should see most of the contract air mail routes carrying passengers also. Last year the Philadelphia Rapid Transit Air Services carried 3695 passengers over its Philadelphia-Washington-Norfolk route before the season closed. While this firm has withdrawn from the aviation field, the Philadelphia-Washington portion of its route will be included in the service to be operated from New York through to Atlanta by Pitcairn Aviation Incorporated, of Philadelphia. The Pitcairn firm recently obtained a mail contract and is expected to begin operations in the fall of the year. Colonial Air Transport, headed by General O'Ryan, and now operating between New York and Boston, plans to extend its lines westward and to include passengers as well as mail and packages. The western leg of the Colonial lines is planned via Albany, Schenectady and Buffalo for the purpose of tapping the northern territory to advantage. Hence we are promised not merely one, but actually two routes between New York and Chicago, for National Air Transport is to operate over the Government Air Mail route under its American Railway Express contract, as already mentioned, while the Colonial firm will either connect with the projected Stout Air Services extension or will operate directly through to Chicago also.

SCALE OF AMERICAN OPERATIONS

The most striking feature of our American air routes is in their length, and many of the well-known foreign lines seem insignificant in comparison. Western Air Express, operating daily from Salt Lake City to Los Angeles, covers a 650-mile route; Pacific Air Transport with its service from Seattle to Los Angeles extends almost the entire length of the Pacific Coast, its route totalling some 1121 miles; National Air Transport, with its New York line in operation, will be flying daily over a 1726-mile route. In such figures lies the explanation of our sudden jump into leadership, as the logical measure of operations must be based in some manner upon the mileage flown. While the most accurate basis of comparison would be that of passenger-miles and pound-miles, the kind of information usually available makes it necessary to fall back upon the basis of airplane-miles flown. It may be news to some readers to learn that Edward Hubbard's Seattle-Victoria passenger and mail airline has been running regularly since October, 1920; that, Ryan Airlines have been operating a daily passenger air service between Los Angeles and San Diego for the last two years without even the aid of a mail contract; that Stout Air Services plan to extend their Detroit-Grand Rapids passenger and mail route from Detroit through to Buffalo this summer, operating over Canadian territory for part of the way. These are merely typical of existing activities and of those which are now being put into effect.

COSTS

Some reference to costs seems in keeping here as this question is so frequently raised. At present air transport costs are admittedly high and the man who uses this method must be willing to pay in some proportion to the added speed which it makes available to him. However, this is a condition which will gradually become modified as increased traffic brings down operating costs, for operating costs in air transport depend just as much upon the volume of traffic as they do with any other form of transport. Indeed, our present scale of operations in the air is so small compared with operations of railroads or steamships, that volume of traffic is by far the most important factor in determining costs. It is just this small volume of traffic, rather than inherent characteristics of aircraft, that make air transport costs high today. The remedy lies in greater use. When air transport becomes as commonly used as other forms of transport the cost of it will be comparable. Perhaps, at some distant date, it may even become cheaper than many other forms of transport, but it is yet too early to make any promises of this kind.

Aspects of Commercial Aviation in the U. S. A.

By George B. Post
Lieutenant (J. G.), Naval Air Reserve

Do you believe that, within the next five years, a fair proportion of the American traveling public will be willing to embark, without undue trepidation, in a comfortably heated and lighted airplane, that will leave New York each evening and arrive in Chicago in time for breakfast the following morning? Probably you do not, and yet it is interesting to consider the proven facts which conservatively predict it, for the searchlight of public interest is focused today on the era of commercial aviation, and this time the background to build upon is safely in hand.

History at a Glance

Langley was ridiculed in September, 1903, for the crash of his flying machine which has since been proven to have been capable of flight. The whole world nodded and solemnly agreed that man had never been meant to fly. People scorned him and he died a failure, only to be granted his well-earned recognition in another decade.

Three months later, on December 17, 1903, the Wright Brothers accomplished the first airplane flight, and during the next few years one would hardly have considered the morning paper complete, if announcement of some new airplane record had not been made.

So had times changed! Perhaps there were now fifteen aviators and as many machines in the whole world, and possibly half of them met with accident or death within a year, yet the Sunday supplement writer could hardly be found who did not tell of the great new age already arrived, where all would fly and airplanes would alight in everyone's yard. Flying, it was true, had come to stay, but commercial aviation, as we envision it now, was far from being accomplished, and the first burst of public enthusiasm was already passed and had changed to a skepticism and waning of general interest.

Progress, however, was made during the next five years. Perhaps the world could now boast of three hundred pilots. Flying exhibits at county fairs were becoming common; airplane meets were always productive of records, and occasional cross-country flights of note were accomplished, but still the public utility of the airplane was as visionary as ever, and flying, as a synonym for suicide, was quite generally accepted!

Then came the war, and airplanes and airships became the talk of the hour. Our Army and Navy looked on for three years without action, but in the next two expanded its force of pilots from a mere handful to over twenty thousand well-trained men. Fighting planes were soon flying one hundred and twenty miles per hour, and bombing planes that weighed four tons flew three hundred miles on carefully planned missions at night.

Aviation in war time, however, is forced at best. New types of planes with hoped-for improvements are rushed to completion with barely a test, while the young and reckless types of men are chosen for pilots, and thoroughly steeped in wine and reckless flying, on their way to the front. Such methods were needed to win, and under the stimulus came tremendous improvements in military types, and invaluable information on the whys and wherefores of flying. Probably commercial aviation was benefited by it. The war developed a manufacturing industry, and indicated the remarkable feats which were later to be sanely accomplished, but it marched along without regard for accident and human life, and paved the way for the period of comparative stagnation in the United States, which, with three or four shining exceptions, immediately followed.

By 1920 everyone had heard about flying, and hundreds of war-trained pilots and aces bought war surplus planes as they happened to find them, and set out with war-time methods to give the public a ride. It was wonderful publicity for flying, for a first-class tragedy will never be barred from the press, and stunts and crashes with shoestring planes and ill-kept motors provided a generous allowance. The public soon felt they knew all about aviation and knew it first-hand, but the great majority knew full well that they never intended to fly!

In the meantime air lines of substantial size and equipment had developed abroad, backed by generous subsidy and guided by government control. Safety was demanded from the start, with good equipment and strictly commercial pilots, and, after the usual mistakes, the lines that had chosen the proper routes and were soundly managed were soon on a definitely established basis. Their progress has been marked in the past few years, and their record of less casualties per passenger mile than the average American Railroad is well worth bearing in mind.

COMMERCIAL AVIATION STRUGGLES

In the United States, however, we continued to muddle through. No subsidies, of course, which was probably wise, but no laws or control, no landing fields or charted air ways except where public-spirited citizens lent a hand, and nothing whatever to induce real capital and management to enter the field.

Public opinion, of course, means everything in an enterprise of this sort, and a sincere effort at careful flying with good equipment was always faced by the menace of adverse publicity from the gypsy pilot with his gaudily painted and often deceitfully attractive machine. Some of these itinerant flyers were the ablest the game has seen, but no examinations weeded the bad from the good; no inspectors went under the paint and varnish and condemned the planes that were structurally unsound, and the resulting crashes that so regularly occurred would inevitably shake the public's faith in what might be the best run lines in the world.

In spite of a condition which our government and the country as a whole refused to seriously examine or attempt to adjust, a few individuals who saw the need were willing to carry on in the hope of future support. Inglis M. Uppercu was one of the first, and Sherman Fairchild another, while to Assistant Postmaster-General Otto A. Praeger belongs the credit for inducing the Post Office Department to experiment with airplanes for carrying the mail.

Mr. Uppercu's Aeromarine Airways was the first, and for years the only consistently operated passenger air line in the United States using really first-class equipment. Twin-motored long-distance patrol planes of the flying boat type were purchased from surplus stock of the United States Navy, and converted at the Aeromarine Factory in Keyport, N. J., for passenger use. Each plane carried ten passengers, seated comfortably in an enclosed cabin, besides the crew of two, which consisted of a pilot and deck-hand mechanic. The planes could carry their passengers for a flight of two hundred miles at a speed of eighty miles per hour, and by 1922, eight of these planes were being used on a regularly scheduled service. Two trips daily were made between Key West, Fla., and Havana, Cuba, during the winter season; one and one-quarter pleasant hours by air, as compared with the eight-hour run which the cross-channel boats required!

In the spring the fleet of planes were flown up the coast to New York, where each ship was carefully re-conditioned and inspected before continuing its journey north along the Hudson and St. Lawrence Rivers and the Great Lakes to Detroit. From June to October the Aeromarine fleet carried passengers and express on a twice daily ninety-minute run from Detroit to Cleveland, Ohio. It was an excellent service, intelligently and conservatively operated, and was the first outstanding example of what could really be accomplished.

AERIAL PHOTOGRAPHY

In 1921 another phase of commercial aviation was put upon an operating basis. During the war the Fairchild Aerial Camera Corporation had developed an excellent camera for airplane work, and the peace-time public quickly appreciated the value that aerial views possessed. City planning and the study of congested traffic points from aerial photographs was immediately suggested and successfully carried out, for in this way a bird's-eye view of actual conditions could be presented in a manner which could not be approached by any other means at hand. Aerial forestry surveys were accurately made within a fraction of the time and cost that was ordinarily required, and road and power line surveys were conducted with similar dispatch.

The Fairchild Company rapidly developed. Instead of hiring questionable planes from itinerant operators, they soon acquired their own fleet of special photographic machines, manned by skilled pilots who had been particularly trained in the work, and operated on an efficient basis. Their success lay primarily in the sound economics of their plan, for in spite of the fact that the public itself might fear to fly, it admired and had definite use for the pictures the pilots could place in its hands, and the business of airplane photography was definitely established.

THE POST OFFICE DEPARTMENT

During this gloomy period while commercial aviation was struggling along without federal aid or control, the government itself, through its Post Office Department, must be given the credit for gradually constructing one of the most highly developed and efficient air lines the world has ever known. It commenced in the spring of 1918 with an unimpressive experimental air mail service between Washington and New York, a route which is served by one of the best five-hour train services in the United States.

Obviously, the remodeled war planes then in use had little advantage over the trains, in so short a route, when the handicaps of inaccessible out-of-town terminals were counted in. The Washington run was soon discontinued, but it proved a start in paving the way for the wonderful system that has since been developed. Today the Post Office Department runs a daily mail each way between New York and

San Francisco in an average elapsed time of approximately thirty-one hours, flying day and night over mountains and lakes, through storms and fog, and *completing an average of 95 per cent of its trips on schedule throughout the entire year!* The route has been marked with flashing beacons and landing field lights for night flying from New York to Rock Springs, Wyo., since 1925. Each plane carries from five hundred to one thousand pounds of mail or parcels post at an average speed for the entire run of well over one hundred miles per hour, and at a cost of ten cents per one-half ounce wherever carried. It has cut in two the schedule of the fastest transcontinental trains. Contracts with civilian aircraft companies for connections with cities to the north and south of the main line run have recently been made and it is planned shortly to extend the system in the hands of strictly commercial companies over the entire United States.

AIRPLANE DUSTING IN INSECT CONTROL

Early in 1925, another direct and unusually spectacular contribution to commercial aviation took place in the United States, sponsored and directed by the writer and backed by the Huff Daland Company, now known as the Keystone Aircraft Corporation of Bristol, Pa. The problem was that of using airplanes as a means of dusting poisonous insecticides on cotton and other plants for insect control, and seems to have had its earliest inception as far back as 1921 in the hands of the Army Air Service near Dayton, Ohio. Credit for the first serious contribution to the idea, however, is unquestionably due Dr. B. R. Coad, in charge of the Delta Laboratories of the United States Department of Agriculture at Tallulah, La., who commenced actual cotton dusting tests in 1922, with airplanes borrowed from the United States Army Air Service.

A brief outline of the situation will give some idea of the possibilities involved. In the United States alone, it was estimated in 1924, that the boll weevil was destroying an average of $300,000,000 worth of cotton each year. A poisonous dust had already been developed by Dr. Coad in his laboratories, which had been proved capable of controlling the pest, but its effectiveness was directly proportional to the thoroughness and accurate timing of the periods within which it was used, and it had been found that, in the hands of the usual unskilled laborer, it was of little or no avail.

Here was a case where speed was of prime importance. Where success depended upon ability to dust at the proper time in spite of muddy fields or tall rank growths which rendered the ground equipment useless, and where one well-paid and intelligent pilot could do the work which seventy-five negroes with their mules and dusting machines could only haphazardly accomplish.

Dr. Coad was the first to see it, and by 1924 had brought his tests to a point where he knew in a general way the types of planes, and the form of flying technique and equipment required. The writer first became interested in the problem through a visit to the laboratories the previous year, and by the summer of 1924 was prepared to approach the southern farmer on a strictly commercial basis. Two specially constructed Huff Daland Dusters were used in the work and, with the help and support of the United States Department of Agriculture and various state and civic organizations, a series of dusting demonstrations were given which drew the attendance of over 15,000 farmers from all parts of the South.

Late that fall, the first case of scientific airplane dusting under contract was accomplished under the writer's direction, near Greenville, Miss., and by the following spring the organization of the Huff Daland Dusters, Inc., of Monroe, La., had been completed, and sixteen specially built airplane dusters had been placed in the field. Last year over 30,000 acres of cotton were successfully protected by airplane from insect damage, at an expense to the farmer no greater than his own inadequate methods would have cost. *Three hundred to one thousand acres per hour* by airplane, as against *thirty acres per day* by ground machines, dramatically told the story, and it only required the development of a proper business organization to place the work on a paying basis.

THE PIONEERS

Before passing on to the present era, it is necessary to mention one further division in the commercial field, made up of the small manufacturers of two- and three-seated machines, and the pilots who bought these machines and flew them about. They formed a weak and struggling group at the start, for with one or two exceptions the large manufacturers of military types held entirely aloof from commercial activity, in the face of the large quantities of war surplus planes which were dumped on the market at the close of the war. As early as 1920, however, a strictly commercial aircraft manufacturing industry had come into existence, made up of a few individuals who were willing to face the odds, and build planes for business or private use.

Some of these newly built aircraft were worse than the obsolete training types they replaced, and high-pressure salesmen were frequently guilty of selling machines to youngsters who had been given a few hours' instruction in flying in new or war surplus planes, and who immediately went forth with a gilded diploma and the assurance that they could now earn their way in the passenger-carrying game. Accidents from this source were probably the most numerous of all, and aircraft concerns could be named by the score which appeared one year, and crashed with their planes before another rolled by.

Fortunately for aviation, however, there were others who knew what it meant and were able and willing to play the game, and the companies these real pioneers established, together with the government manufacturers who have recently entered the commercial field, comprise the nucleus which stands ready to carry on with the work which is now at hand.

THE PRESENT ERA

So passed the years that followed the war. Loaded with every conceivable handicap, the commercial airplane, by 1925, had nevertheless shown, here and there, what its worth might be, and the public was ready at last to seriously consider the facts and wonder what was the matter. The Army had just completed its globe-girdling flight, and had sent a fighting plane from New York to San Francisco in a single day; while the airplane mail, now firmly established, was reaching the business man of the country and proving its inestimable value. Airplanes once more were holding the public's attention, and fired the imagination with the feats already accomplished. More and more came the call for a definite policy for aeronautics and commercial flying, and in 1926 the issue was suddenly brought to a head in dramatic fashion.

Colonel William Mitchell, formerly Assistant Chief of Air Service of the

United States Army, had made charges in a newspaper article, to the effect that our government's air service was being criminally mismanaged, and the national policy for aeronautics, if it could be said to exist, was desperately in need of a change! Fireworks naturally followed, and General Mitchell was virtually dimissed from the service, but not until the press had been filled for months with airplane facts and figures, and public support of the need for drastic action was clearly established.

President Coolidge, in 1926, named Dwight W. Morrow as chairman of a special investigating committee, while the senate had in the meantime appointed a separate one of its own, and in each case the men who were actually flying and building airplanes were invited to speak their minds. A bitter controversy was inevitable, particularly on the military issue, where it centered about Colonel Mitchell's plan for a unified air service, as opposed to a separate Army and Navy control. Even today it is difficult to express a fair opinion on the many points involved. Suffice to say, however, that the entire subject was thoroughly aired and intelligently studied, and that the long needed action was quickly taken.

Assistant secretaries for aviation were appointed in the Departments of War, Navy, and Commerce, and the industry to a man approved the choices the President had made. From the military standpoint their duties were those of coördination between the two branches of the service, and between the flying and non-flying groups in each department, and with the new building programs and subsequent appropriations which have recently been passed, it is felt that the proper development of our National Defense in the air is well under way.

It was in the field of civil aviation, however, that the most revolutionary changes took place, when, on May 20, the Air Commerce Act of 1926 received the signature of President Coolidge! This act alone was unquestionably the turning point for commercial aviation in the United States, and together with the Kelly Bill, or Air Mail Act, which was signed in February of the preceding year, and the appropriations which placed funds at the Department of Commerce's disposal, it paved the way for the unprecedented developments which are taking place today.

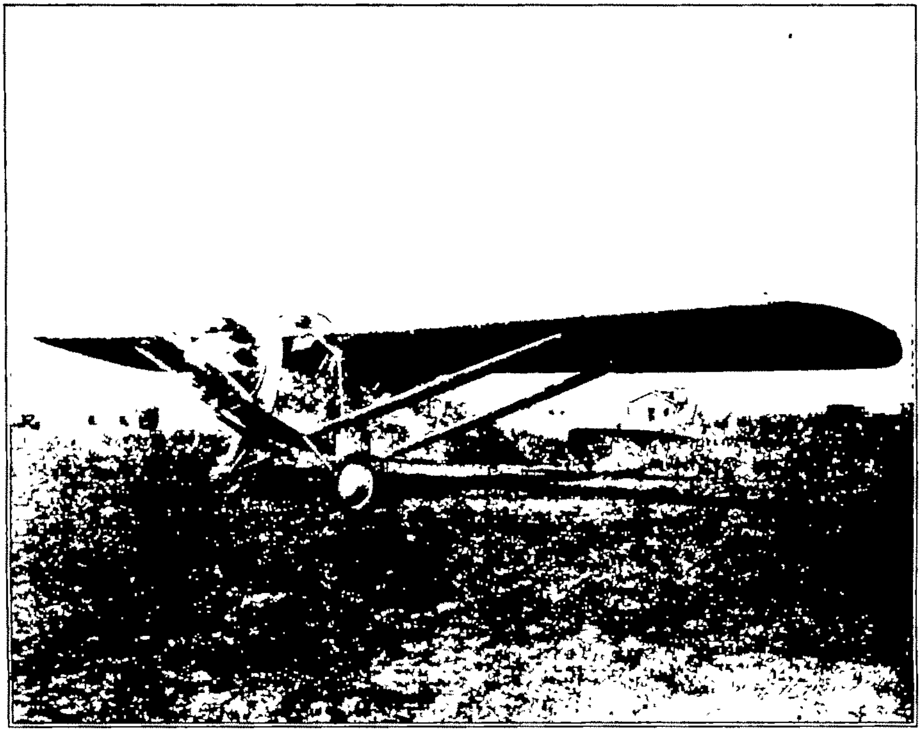
Briefly stated, the Air Commerce Act provides for the examination and licensing of civilian pilots. It provides for the inspection and registration of aircraft used for commercial purposes, and the restriction in the use of aircraft which do not comply with the airworthiness specifications. It provides for the development of airways, the selection and marking of airports and emergency fields, and the lighting of these routes for night flying The Kelly Bill, moreover, gave authority to the Postmaster-General to contract with commercial aircraft organizations to carry the mail, and made it possible for the department to indicate that it would entirely step out of the field of airplane operation, as soon as the industry had shown it was capable of taking over the transcontinental route which it then controlled.

Private capital was quick to grasp the significance of the change. In the contracts for air mail lines, lay definite business which the public had already shown it was ready to support, with the added inducement of passenger and express transportation as soon as developed. Lighting, charting, and preparation of airways was already, or was rapidly being accomplished, while the new laws gave ample protection for the use of first-class equipment and the public good will which conservative flying develops. The air line problem could at last be placed on a business basis and in the light of these changes, it may be well to review the field as a whole, as it exists today.

CLASSES OF COMMERCIAL AVIATION

For the purpose of comparison it may be convenient to divide commercial aviation into three general classes, made up of the privately owned aircraft for business or pleasure use, the aircraft employed in taxi service and special industrial purposes, and the transport planes which are operated on a schedule basis.

Class one contains by far the greatest number of civil aircraft in use in the United States today. It embraces the youngsters who have bought a new or war-time plane, and fly for the love of the game with the frequent hope of financial rewards in the future; the doctor, the salesman, and the business executive, particularly in the middle west, who have recently put the airplane to more and more widespread use, and the man who owns a plane and who frequently employs a chauffeur for commuting and strictly pleasure purposes. The field can be compared to that of the passenger type of automobile, and may be expected to follow, in general, along similar lines. It was the first to be developed in this country, because individuals here and there could be shown the benefits and induced to buy planes, at a time when the general public was unwilling to fly or invest in airplane projects, but it would seem that at least from the standpoint of capital invested, it will soon be passed by the other two classes.



TRAVEL AIR SINGLE ENGINE TRANSPORT

Class two must obviously include the innumerable applications of commercial aircraft, exclusive of air line use and the privately owned machines, and the examples of agricultural dusting and photography which have already been mentioned are typical of this type. Forest fire patrols, prospecting, and exploration would also be included, as well as the thousands of planes already in daily service, which are available for hire for special trips, a service which the Curtiss Exhibition Company, under the leadership of Casey Jones, has so admirably developed. Aerial taxicabs for quick runs between regular air line terminals and the outlying districts have their definite place in this field, and as the air lines themselves develop, they should rapidly be placed upon an organized basis.

It is in class three, however, that the greatest development is expected during the next few years; a class which is made up of air transport lines carrying mail, passengers, and express, over organized routes, and directly comparable to the railroad companies of today. It is the air line company which was given its chance, in the Air Commerce Act of 1926, and it is these organizations, which have already grown to surprising strength, which will show the public the benefits which travel by air provides.

On February 15, 1926, the first air mail contract route was formally put in operation by the Airplane Division of the Ford Motor Company, with a daily service between Cleveland and Detroit, while on the same day an additional route was inaugurated between Detroit and Chicago. On April 1 the Florida Airways Corporation opened its 468-mile run from Miami to Jacksonville, Fla., which line has since been extended to Atlanta, Ga., while the routes from Chicago to St. Louis by Robertson Aircraft, Inc., from Elco, Nev., to Pasco, Wash., by Walter Varney, and from Salt Lake City, Utah, to Los Angeles, Calif., by Western Air Express, were all in daily operation before the close of the month.

On May 12 the National Air Transport Incorporated opened its 987-mile run from Chicago to Dallas, Texas, with stops at Moline, Ill., St. Joseph and Kansas City, Mo., Wichita, Kans., Okalahoma City, Okla., and Fort Worth, Texas; while on July 1 a route was opened by Colonial Air Transport Incorporated between New York City and Boston, Mass. Other runs, including a service between Seattle, Wash. and Los Angeles, Calif., are soon to be established, and before many years have passed they will be formed together into a network of lines, which will cover the entire country from the Atlantic to the Pacific Coast.

The majority of these companies are backed and managed by men of recognized financial and business ability. Real capital has entered the field; real equipment is being intelligently operated, and there is every reason to believe that within another five years it will be possible to travel by airplane at an average speed of well over one hundred miles per hour between any of the larger cities of the United States, flying by day or by night, with the positive assurance that no greater risk is involved than is found in the present-day travel by train.

As a result of recent developments we understand that even the city of New York has deigned to raise its head from the muddle of subways and other political machinations, and has appointed a committee which is charged with the study of adequate air port facilities, and it is the writer's opinion that the public, at last, is ready to fly, and that the era of commercial aviation in the United States is really at hand.

Lighter-Than-Air Craft

By P. W. LITCHFIELD
President, Goodyear Tire and Rubber Company

RENEWAL of activity by several nations in commercial transportation by lighter-than-air craft which was interrupted in 1914, and of interest in this field, paralleling that in heavier-than-air, marks the beginning of the year 1927.

While this country is somewhat behind as the year opens, some interesting developments are ahead.

AIRPLANES AND AIRSHIPS DISTINGUISHED

Perhaps we should make clear at the outset the distinction between the airplane and the airship. The *airplane* remains aloft through the aero-dynamic forces created by the forward motion created by its motors, plus the lifting effect given by its tilting wings. Being heavier than air the airplane must remain at high speed and at once descends if its motors stop.

The *airship* is actually lighter than the air in which it floats, its motors being used chiefly to carry it forward, and its rudders and control surfaces primarily to give it direction and stability. If its motors fail, the lighter-than-air craft still remains in the air, and will be brought down only by the gradual release of the lifting gas which it contains.

The principles behind the two types of aircraft are widely different; the two are not in competition with each other, the field of each is separate—and parallel. The airplane is faster, but is limited in carrying capacity and endurance. The airship has a much greater cruising radius and carrying capacity, but somewhat less speed.

Because of its size, the airship will never be used commercially for short-distance trips, but will act as a long-distance carrier, particularly between continents and over oceans, with the airplane furnishing the feeder lines coordinating with it.

In the course of development over the past quarter century, both types of aircraft have had many setbacks, and this is one reason, perhaps the chief reason, why the airplane has gone ahead faster in commercial acceptance than the airship.

Because of the lesser cost and the smaller crew, the accidents which have occurred in developing the airplane have attracted comparatively little attention; whereas disasters in the use of the airship, while few in number, have been more spectacular and more costly in loss of life and property, and so have served to create doubts and retard development.

The situation is identical to that of the automobile and the ocean liner. Automobile accidents are of daily occurrence, and the total casualties from this source run into the thousands every year.

A person is safer on board an ocean liner than in an automobile, according to the statistics compiled by the insurance companies, and it is a matter of popular knowledge that disasters to ocean-going ships are comparatively few in number. Yet an accident to a liner is a spectacular thing and its effects are magnified in the public mind as contrasted to automobile accidents.

FAITH UNDAUNTED BY DISASTER

There have been four conspicuous triumphs in lighter-than-air since the war, which will be referred to later, but these have been minimized by four conspicuous accidents in the same period. The English-built and operated *ZR-11* broke in two during a trial flight near Hull, England, due probably to insufficient internal strength accentuated by incorrect operating; the *Dixmude*, German-built and French-operated, was lost in the Mediterranean due to getting too far away from its base without adequate weather information and with no alternate base to return to; the Italian-built and American-operated *Roma* was forced down due to rudder failure, a mishap which would not have been serious had the ship not collided with a high tension wire and, being inflated with inflammable hydrogen gas, caught fire and was destroyed; the American-built and operated *Shenandoah* broke in two in a great storm.

It is well to face these facts to determine whether the causes of failure are inherent, or so likely to occur as to invalidate the value of the improvement, and if not, to learn how they can be minimized or eliminated.

At least eight nations have indicated their belief that lighter-than-air craft have definite commercial and military possibilities.

England, which began to build rigid airships during the World War and which used the small non-rigid blimps effectively in coast patrol and submarine spotting, is now enlarging its present fleet by two ships nearing completion, planning to use them on a route from England to Malta, to Egypt, to India, to Australia. These ships are to be of 5,000,000 cubic feet gas capacity (hydrogen), or twice the size of the *Los Angeles*. It is estimated they will cut down the distance from England to Egypt from six days to two and one-half; from England to Bombay from fifteen days to five; from England to Australia from twenty-eight days to eleven. These are matters of no small import to the Empire.

United States, which began building and flying the small blimps during the war, built the *Shenandoah* in the government hangar at Lakehurst, acquired the *Los Angeles* as a post-reparations ship from Germany, and had the *RS-1*, a semi-rigid or Italian-type ship, built by Goodyear.

Italy has pinned its faith to the semi-rigid type, and is pursuing an active program of development. It was an Italian ship, the *Norge*, that made the first flight over the top of the world from Spitzbergen to Point Barrow.

Spain, following the example of England in seeking to shorten the lines of communication with customer-nations, has voted a subsidy for a commercial company, which will operate three rigid ships of 5,000,000 cubic feet capacity between Seville and Buenos Aires. One of these ships is scheduled for completion next year at the Zeppelin Company's hangars at Friedrichshafen, Germany.

Japan has bought a semi-rigid of the *Norge* type from Italy, and is now assembling it and has ambitious plans ahead.

Even Soviet Russia is manifesting an interest in airships.

DEVELOPMENT IN GERMANY

In the case of Germany it will be illuminating to include here a brief sketch of the development of lighter-than-air, for it was in Germany that the rigid type originated, and that country has only recently been released from prohibitory rulings of the Inter-Allied Air Council and is now free to resume the operations interrupted by the World War.

Men had learned to ascend into the clouds by utilizing the lifting power of a gas that is lighter than air, as far back as the French Revolution, and in our

American Civil War, Count Zeppelin, a young German army officer on leave, joined the Union army and made flights in an anchored balloon to observe the enemy's position and to direct artillery fire.

It was obvious, that if a balloon could be built large enough to support the weight of a motor and steering apparatus and be shaped to lessen air resistance, it would become dirigible, that is, subject to the direction of its pilot.

Santos Dumont, the brilliant young Brazilian, made spectacular flights with the early dirigibles at the beginning of the present century, and in various countries men were experimenting with metal, fabric, motors, fuels, lifting gas. It was only within the last quarter century, however, with the perfecting of the internal combustion engine, that the project began to become practicable.

Count Zeppelin, who had dreamed of conquering the air ever since he took those flights in Virginia in 1863, resigned his commission in the German army in 1891 to dedicate the rest of his life to this purpose.

In 1908, Zeppelin, then seventy years old, stood discredited and the subject of ridicule. His third successive ship had failed him.

True, it had made a spectacular flight over the Swiss Alps to Lucerne and back, but at the moment of triumph some mechanical trouble occurred compelling a forced landing, and presently the ship was caught up in a storm, carried away and wrecked.

The last of his personal fortune had gone into the ships. The grudging government aid he had received was used up and no more forthcoming. But with indomitable courage the aged inventor appealed to the common people of Germany and within a few months there was raised six million marks by public subscription. It was with this money that Zeppelin built the next ship which was the one to prove his contention.

Thereafter the soundness of the Zeppelin principle was conceded in Germany. By the time of the outbreak of the World War hangars had been established in several cities, passenger airships had carried more than 35,000 passengers without accident or mishap, and Zeppelin was planning a line from Europe to America.

It is probably too early yet to make fair appraisal of the usefulness of the Zeppelin ships during the war, or to speak with any finality of the military value of the rigid airship. But certain facts are available and recognition is growing among experts that whatever vulnerability the hydrogen airship of 1914–1918 had, Zeppelin's ships acted as the eyes of the German fleet, on more than one occasion saving a German fleet from being cut off by surprise attack; that through locating mine areas and directing activities of mine sweepers they helped prevent the submarines being bottled up in their bases; that Zeppelin raids over England retarded the manufacture and shipment of war material; and that the threat of such raids held in England for home defense, a million of men and thousands of guns which otherwise might have turned the tide in France.

After the war the Zeppelin Company built a small passenger airship, the *Bodensee,* which made ninety-eight flights in ninety-one days' operation, operating on a regular schedule between Friedrichshafen on the Swiss border and Berlin, and on two occasions flying up into Sweden. It was just completing a second ship, the *Nordstern,* when the allies shut off further operations.

Most of the military airships at the end of the war had been destroyed by their crews to prevent their falling into the hands of the allies, but the *Dixmude*, which was just being completed, was finished and turned over to France, the *Bodensee* and *Nordstern* given to France and Italy, and the *Los Angeles* was authorized some time later for the United States.

Realization of the airship possibilities as demonstrated in Germany is one of the factors that has spurred other nations on to take up their development.

The airship can fly faster and farther than any large craft. It can carry larger loads than any fast vehicle. It is independent of land and water, mountains and oceans. Airships have three times crossed the Atlantic.

CONSPICUOUS TRIUMPHS

Indeed there are six flights that stand out, not only as epochal in the development of airship operations but as definitely indicating the potentialities ahead.

In November, 1917, the *L-59* flew from Jambol, Bulgaria, to German East Africa and back on a 4225-mile, non-stop flight, occupying a little less than four days, carrying munitions and medicine for beleaguered colonial troops, being called back before reaching its destination by a radio message that the German force had surrendered.

In 1922 the British *R-24* flew across the Atlantic to Mitchel Field, Long Island, refueled, and returned.

In 1923 the *Dixmude* made a four-day flight and return over the Mediterranean and North Africa.

In 1924 the U. S. S. *Shenandoah* flew 8000 miles around the rim of the American continent.

In the same year, 1924, the *Los Angeles* made a 5100-mile flight from central Europe to Lakehurst, N. J.

And in 1926 came the epochal four-leg flight of the semi-rigid *Norge* from Rome, Italy, to Point Barrow, Alaska, with stops at Pulham, England; Oslo, Norway; Spitzbergen, then over the North Pole, covering 6820 miles.

DIFFICULTIES AND DANGERS

With this background we are ready to consider now what difficulties and dangers the airship has to face and to inquire what steps have been made to alleviate them.

The first of these is the *weather*. Snow and ice have little effect. The doped metalized cover of the Zeppelin-type airship sheds water, and snow blows off as the ship is in flight; or, if moored to the mast and becoming heavy, can take off and in a short flight remove the accumulation.

The *lightning* danger is practically non-existent. Zeppelin ships have been struck with lightning again and again without any more damage than a pinhole where the bolt hit, the metal framework of the ship acting as a "Faraday Cage" in which the charge is dissipated and escapes without harm.

Danger from *storms* is a real one, but this danger, too, can be held at a minimum. Storms travel in easily observable paths and with a concentric motion. Having adequate information as to their course, the airship pilot does not run away from storms but steers for and utilizes them, just as Dr. Hugo Eckener in bringing the *Los Angeles* to America turned abruptly northwest near the Azores, sailed one thousand miles on that course till he caught the outer edge of a storm and swung down past Newfoundland and the Grand Banks with the storm at his back, flying ninety miles an hour with its motors idling.

The *fire* hazard came largely from the presence in the early ships of a gasoline-driven motor and hydrogen gas. Considerable progress in lessening this risk was made even before the war through better construction and design and personnel control. However, with helium gas, of which America has a monopoly, the fire hazard is practically non-existent. Had the *Roma* been inflated with helium it is quite unlikely that any casualties would have resulted from the ship striking the ground, and it was due to the fact of helium that the only casualties in the *Shenandoah* accident were the men in the control car and one engine car which fell free of the ship.

Incidentally the *Shenandoah* construction followed the earlier-type German ships in having the control car suspended from the ship rather than built into it, as is the case in the *Los Angeles*. This suspended construction represented the effort of early German designers to further minimize the fire hazard due to their being forced to use hydrogen. With built-in cars on the *Shenandoah* there would probably have been no lives lost.

On the matter of engineering failures or faulty construction this should prove no insuperable obstacle, but rather act as a challenge to the engineering genius of America.

DEVELOPMENTS AND IMPROVEMENTS

Airship construction involves the services of the chemist, the metallurgist, the motor builder, the fabric expert, the designer. It calls for calculation of stresses similar to those used in bridge construction but more intricate and complicated. The problem of the airship designer is to build a ship as large as an ocean steamer and yet having the weight of a small channel schooner.

The *Los Angeles* is 656 feet long as against the 900 feet of length of the *Leviathan*, but while the *Leviathan* has a displacement of 60,000 tons, the *Los Angeles* with the maximum lift and load weighs less than 90 tons.

It was the invention of the internal combustion gasoline motor plus the development a few years later of the strong, light metal, duralumin, that made the airship practicable as a commercial carrier, but this problem of weight and strength and the further problem of balance, of adjusting the load in framework, fuel, and materials that is always before the airship designer.

A great deal of progress was made during the war. The speed of airships increased from fifty-five miles to eighty miles. The altitude at which they could fly increased from 5000 feet to 25,000 feet and higher. The carrying capacity and cruising radius was more than doubled.

The 6,500,000 cubic foot ship authorized by the last Congress as replacement to the *Shenandoah* should be able to fly 5000 to 8000 miles with full load without refueling.

The modern airship would utilize the accumulated factors of strength and proved construction developed in twenty-five years of rigid ship building and operating.

These three are probably the most important:

1. The multiple-cover system. One light thin cover whose sole function is to hold the lifting gas; a fireproof and waterproof outer cover to form a fair surface; and a stress-taking metal framework between the two. This arrangement of dividing the functions has the advantage that in case of damage one structural part may temporarily take care of the functions of the other.
2. The multiple-cell system for containing the lifting gas which permits, like the bulkhead system of the steamship, the damage or complete deflation of two or

more cells without danger to the ship.

3. The accessibility of the interior of the ship to inspection and repair even in flight.

There have been important improvements in design. The built-in control car feature utilized in the *Los Angeles* has already been cited; a military airship will have its engine cars as well enclosed within the hull of the ship, with only the propellers projecting on outriggers, thus reducing the air resistance and increasing the speed and efficiency. An airship built now would also have tilting propellers turning in a ninety-degree arc to help force the ship upward or downward as desired.

The perfecting of the mooring mast largely removes the difficulty of taking a ship in and out of the hangar in a cross-hangar wind. Now a ship can tie up to the mast and wait till conditions are favorable.

In fact, in commercial airship operations the ship could operate largely from mooring mast to mooring mast, using the hangar only as a surface ship uses the drydock, or the railroad uses the repair shops, that is for overhaul, inspection, and repair. Passengers and freight would be taken to the top of the mooring mast in elevators and embark directly into the nose of the ship. Refueling and even regassing can be carried on at the mast.

The latest and most important improvement in airship design is the substitution of a triple keel for the former single keel, giving great increase in longitudinal strength, similar to the effect of the breaking strength of three lead pencils tied together as against three single pencils. Associated with this is a new type of transverse girder so sturdily built that each section is self-sustaining, so that the failure of one portion of the ship would not endanger the ship as a whole.

AMERICA'S ADVANTAGES AND DISADVANTAGES

In the race among the various nations for airship supremacy, what are America's advantages and disadvantages?

The *first* advantage is the exclusive possession of the non-inflammable helium gas. Helium is more expensive than hydrogen and has somewhat less lift, so that for operating purposes the 6,500,000 cubic feet ship authorized by the last Congress will be relatively comparable with the 5,000,000 hydrogen ships being built by Great Britain.

It is entirely within the realm of probability that the present defenses against fire hazard will be sufficiently extended shortly so that hydrogen ships will eventually again be used in this country, first for freight and express, and later for all commercial operations, with helium reserved for military use.

However, helium would probably be used at the outset in commercial operations as the supply is abundant, and an increase in production would still further lower helium costs.

The inflammability of hydrogen probably will restrict the field of the military airship so inflated, to long-distance reconnaissance with the fleet, rather than making it an offensive weapon. Because of its speed and cruising radius it has been estimated that for this purpose a single airship can take the place of three surface cruisers, permitting navies to concentrate more money, metal, and men in strictly fighting units.

Plans for military airships contemplate carrying machine guns mounted on top, in the engine cars, in the nose and tail, for defense against airplane attacks, and also for the carrying of three or more fighting planes inside the ship. These can be released and give battle in a case of unexpected attack, returning afterwards to the airship.

The airship's ability to ascend faster than most airplanes to which it would be opposed, the steadiness of its gun fire as against the fast moving airplane, its ability to lose itself in the clouds, further reduces the vulnerability of the helium-filled airship as a fighting weapon.

A *second* advantage is the mechanical-mindedness and engineering genius in this country. American motors, fabric and duralumin need not take second place to those of any other country in the world.

We must, however, reckon with the fact that construction costs in the United States will be higher, due to the fact that the airship is produced in small quantities, one or two at a time at the most for some time, preventing America from capitalizing its facilities for mass production, which have equalized costs in production of automobiles, airplanes, and other articles.

Airship construction abroad with lower priced labor will undoubtedly start off with smaller overhead. And operating costs, using helium, will be higher than for hydrogen ships.

If the airship, however, can cut in two or even reduce by sixty-five per cent the time now consumed by surface ships in journeys between continents, and is to become a factor in passenger, express, and mail carrying in the future, the matter of equalizing these construction and operating costs becomes a national question comparable to that of the merchant marine.

Several solutions have been suggested, all of them involving legislation. One of the most interesting is that of providing, in case of international traffic by airship between this country and another country, that at least half the traffic must be carried in American-built and owned craft.

The *third* factor in the coming international airship race is the fact that in addition to American industrial power and capacity, and the specialized experience and capacity of American engineers in the government service and in industry, we have in this country the best talent from the Zeppelin organization.

About the time the *Los Angeles* was delivered to the United States Navy by its constructors at Friedrichshafen, the Goodyear Tire & Rubber Company, the largest airship builders in America, having constructed some one hundred non-rigid dirigible ships of various types, took over the American rights from the Zeppelin Company and employed Dr. Karl Arnstein, chief engineer of the Zeppelin corporation and the man responsible for building the last seventy Zeppelin ships.

Dr. Arnstein has been engaged for the last two years, with his staff of a dozen experts, in working out designs for improved American ships based on his experience in Europe. Since airship building is a highly specialized art, this fact is of unusual significance.

At the present time it is the consensus of experts that Europe now definitely holds the lead in airship development, with British and German-Spanish ships scheduled to take the air next year, but the interest shown by the last Congress indicates a definite revival of interest and a determination on the part of this government not to lag behind, or to accept the *Shenandoah* disaster as anything other than a challenge to American engineering and operating genius.

Aerial Globe Trotting

By Captain Leigh Wade

Member United States Air Service and Round-the-World Flyer

SHORTLY after the World War was over, many aviators turned their thoughts towards the practical use of aircraft, and many of them were in the United States Army Air Service. Believing it possible to circumnavigate the globe by an air route, these men began studying the problem, gathering all data, maps, and information they could secure, to await the opportune time to prove to the world that such a feat was possible.

The Preliminary Work

The result was that in 1923 a committee was appointed to select a route and an airplane with a performance and strength to withstand the hard usage it would be exposed to. This being accomplished, the personnel to make the flight was selected, and permission was granted by the War Department in December, 1923, for the demonstration.

Before we start the trip, let us find out about its organization, or the advance preparations. The route was selected and divided into six parts or divisions. An experienced flying officer was put in charge of each to select the landing places, distribute the supplies, arrange for an interpreter, if necessary, billeting, etc. These men are mentioned particularly because of their part in the success of the flight, and the desire of the members of the flight to have everybody know of our appreciation for their work even though they have not been mentioned publicly.

We had new engines, spare parts and tools distributed so well over our route that we could make any repairs or adjustments necessary. All boxes were packed the same whether in Alaska, India, or Greenland. We could find anything in the dark, if necessary. The wood used in crating the supplies was of spruce, the principal wood used in wooden airplane construction, so that when we needed repairs to wooden parts all we had to do was to take a piece from one of the crates.

When the preliminary work was well underway, the personnel selected to do the flying was ordered to Langley Field for a brief course to familiarize ourselves with the type of plane to be used, meteorology, and navigation; then to Santa Monica, California, to supervise the final construction of the planes to be used.

The Start-Off

Now you may ride in the planes with us on a trip around the world. On March 17, 1924, we left Clover Field, Santa Monica, for Seattle, Washington. This part of the trip was to fully test out our planes in order to assure ourselves that nothing had been overlooked. The planes were flown over land as land planes.

At Sandpoint Flying Field, Seattle, the wheels were taken off and pontoons put on to fly to Calcutta, India, as seaplanes. In addition, we checked over our craft very carefully, and arranged all the equipment to be carried. Our personal luggage did not exceed fifteen pounds per person.

On April 6, we departed for Prince Rupert, British Columbia, following the inland passages most of the way. Only a short distance out, we came into low clouds, thence to fog, snow, rain and frequently strong winds. On arrival at Prince Rupert, it was snowing heavily and Major Martin damaged his plane on landing. Necessary repairs were made while waiting for the weather to clear.

Leaving here, we entered into the hardest part of our journey, because of the meteorological conditions to be encountered. The weather was colder also, which made our work on the planes more difficult.

EXPERIENCES ENCOUNTERED

At Sitka, Alaska, a storm came in on the open side of the harbor, which lasted for two days, The first day, three of the planes dragged anchor and were in danger of colliding before we could reach them. We worked from noon until late in the evening before they were made fast to adequate anchors. The second day, one of the planes broke loose from its mooring. Luckily one member of the flight was aboard who saved the day for all of us. The others were rushing about trying to secure boats to go to the rescue, or were wading out in the water to try and hold the plane from being dashed to pieces on the rocks, for each swell was bringing it nearer and nearer to danger. Just as it was on the crest of a swell, ready to hit the rocks on the next, he managed to get the engine started and pulled the plane out of danger.

The next day we passed by the glacial region but were denied the beautiful scenery by a blinding blizzard. It was just like flying at night; we broke formation; every plane for itself. Fortunately, however, it ended just south of the entrance to the harbor at Cordova. Had the shore line not been straight, we would have piled up on the rocks, or against any projection or island, as we were following the shore line very closely. It was a great relief to arrive at Seward in Resurrection Bay.

It was on our departure from Seward, shortly after passing Kodiak Island, that Major Martin had his second mishap, being forced down near the Indian village of Kanatak on the mainland. The rest of the flight rushed with engines wide open to Chignik Bay to radio for help. He was picked up the following morning by a Navy destroyer, and a new engine was ordered from Dutch Harbor. While the Major was awaiting his new engine, we flew on to Dutch Harbor because of the danger the planes were exposed to by probable storms at Chignik Bay.

On attempting to rejoin the flight, Major Martin crashed into the side of a mountain, completely demolishing his plane, but fortunately not injuring either himself or Sergeant Harvey, his assistant and mechanician. After struggling over the mountains, facing snow blindness, living on meagre emergency rations and wild game for ten days they arrived at Port Moller on the Bering Sea side of the peninsula. Here a boat picked them up and they returned to the States.

During this interval of nearly two weeks, we beached our planes to permit the pontoons to dry out and made any necessary repairs and adjustments to our engines and planes. Then we received orders from Washington to proceed with Lieutenant Lowell Smith in command of the flight.

THE ALEUTIAN ISLANDS

Through the Aleutian Islands we had many things to worry us, such as sudden changes in weather, usually from bad to worse, and peculiar winds called by the natives "woolie wahs." From a perfect calm, a "woolie" would sweep down, often sweeping everything in front of it. The islands are sparsely inhabited, in most cases of volcanic origin, and without any trees.

Flying along four or five hundred miles, far from civilization, without seeing a human being, only occasionally a few birds, a seal, or whales, makes one lonely. Now and then we would close in our formation for companionship, sometimes with the wing tips almost touching. I can remember as if only yesterday the whole group flying along —Lieutenant Smith leading with the *Chicago;* Lieutenant Leslie P. Arnold in the rear cockpit; the *New Orleans* on the *Chicago's* left, commanded by Lieutenant Eric Nelson, and "Smiling Jack" Harding giving the rest of us all of his smiles; Henry H. Ogden of *Mississippi* with me, wishing for the warmth of our Sunny South. We conversed by hand signals, which we called the "rabbi code."

Many times when we prepared to leave on a leg of our journey, a stiff breeze would be blowing, necessitating one member of each crew lying flat on the pontoon to free us from the mooring. In doing so we would get the spray from waves breaking on the pontoons. Then we would hop in and fly several hundred miles, our flying garments freezing with a coat of ice, which served to keep the heat in next our bodies.

LIVING ACCOMMODATIONS

Our living accommodations in many instances were of considerable contrast to those afforded by our American homes or hotels. We quartered ourselves in traders stores, salmon cannery bunk houses, or on boats with bunks just wide enough so that we had to sleep in one position and which were not long enough to stretch out in. Now it seems like a hard life, but, at the time, it all was as comfortable as one could wish for.

We enjoyed all of it, and many amusing incidents happened. In one place a fisherman, Jack Toner, had a houseboat which was a saviour to us. Working in the open and becoming cold, we would call on him to get warm. When we departed he asked us to write our names on his front door, which he carefully varnished over to preserve. Later, on his return from a fishing trip, he found that someone had stolen his front door for a souvenir.

At one place, living in a bunk house with some fishermen, was a man with a long beard who was heralded as a bear hunter of merit. One's hair would stand on end to listen to him relate one experience after another. On one occasion, while on the beach without any weapons of defense, a huge Kodiak bear surprised him. Dashing madly down the beach, not knowing where or how he was going to escape, a large tree loomed in view. This tree had but one limb which was twenty feet from the ground. Just as he neared the tree and the bear was ready to strike him down, he gave one tremendous leap. All excited, one member inquired, "Did you make it?" The old man replied in a nonchalant manner, "Missed it on the way up, but caught it on the way down."

In the attic of a trader's store, living on everything that ever grew in a tin can, the chief of the Aleutian tribe kept some chickens. One of our members with an ingenious mind fixed the engine of his motor boat, the only one on the island. Having bargained with him for two chickens for making the necessary repairs, we enjoyed a delicious dinner, cooked by ourselves.

At another island we found a population of twenty-six, all the men being absent on fox islands, with the exception of one, "Mike," their chief. "Mike" was very ambitious and many times brought us fish which we certainly enjoyed.

CONTINUING THE FLIGHT ACROSS THE PACIFIC

We had a great problem to complete our flight from Attu Island across the Pacific. The weather never seemed to clear on both ends, that is, at Shimshu of the Kurile group, Japanese territory, and Attu Island. Finally we selected a day, but very shortly on our way we encountered a terrific storm. In attempting to detour around it, we used up our fuel and were forced to take refuge in Soviet territory, on Bering Island of the Komandorski Islands.

Foreseeing such an event, we had sent a boat of the Bureau of Fisheries ahead, taking position just off shore. When they saw us coming in they dashed in and dropped moorings to which we made fast overnight. We received a call from the Soviet Governor General of the Islands on board the boat. Our relations were most amiable but he regretted he could not invite us ashore. Leaving early the next morning, we completed our Pacific flight upon arrival in Japanese territory.

Passing along the Kamshatka peninsula we encountered a very bad storm, which lasted for two days. After leaving our planes to go aboard the U. S. destroyer *Ford*, which with two Japanese destroyers was waiting for us with supplies, we were unable to get near our craft until the following afternoon after the storm calmed down. Then we found the moorings had chafed through and only an emergency rope was holding the planes to the moorings.

By two in the morning we had refilled and were on our way to Yetorfu Island. Such a journey! Ducking from one island to another in fog most of the journey; the only relief was in seeing a few birds taking to the air or sea lions rolling off the jagged rocks into the water as we passed an island.

It seemed like heaven to land at Lake Hittakappu on Yetorfu Island and find green grass, trees, and a large crowd of Japanese in their highly colored costumes. Among them was a group of school children who had hiked overland for three successive days to be there on our arrival.

IN JAPAN

We arrived at Lake Kasumigauru, just outside of Tokyo, ten days after the Japanese exclusion act was passed at home. We were thirty-one days behind schedule and had lots of work to do on our planes, such as changing engines, pontoons, etc. We found the Japanese had planned a two-weeks' welcome for us. Ambassador Woods arranged a condensed schedule, so we left our work and went on a two-day reception, and as warm and sincere a reception as anyone could hope for. Our only complaint was that there were so many meals in one day and that we were not able to eat all the delicious food.

They extended every means possible to make our journey successful and enjoyable all through Japan. When we arrived at Kogoshima, the last stop in Japanese territory, late one afternoon, we received a surprise and thrill. It seemed as though all of Japan was gathered on the beach to welcome us at sunset; and a band from our Navy played our national anthem, while about fifteen thousand school children sang in our own language.

TRAVELING THROUGH CHINA

Our next flight was across the Yellow Sea to Shanghai. It was the first perfect flying day since we started. We were greeted by a great mass of people, and were given a magnificent reception in the evening.

Then and there we decided that we must have relays for receptions. We had only our heavy uniforms and we were in the tropics. So afterwards we took turns in borrowing a light suit from someone aboard a boat and going to the receptions.

The method used in propelling boats worried us. In sculling a boat by a long oar around our pontoons, the sides of which were made of a thin veneer, we feared a puncture and delay. As it was we had difficulty enough arising from the water with heavy loads. Therefore, all through the tropics, we sent a boat on ahead with fuel aboard so we could land alongside or near it, to take on the needed supplies.

Leaving Shanghai, we followed the coast line to Amoy, and on to Hongkong. It was amusing to see the native fishing boats away out to sea, propelled only by man power. Sometimes we came so near them that they scrambled all over the boats in fright.

From Hongkong to Hoiphong, French Indo China, we passed over a group of islands that rival, if not surpass, our Thousand Islands in beauty. Some were mere rocks of varied colors, while others were covered with a jungle forest. We were pleased to have clear weather for a fog or storm undoubtedly would have meant disaster as the Islands were so close together and numerous.

On the next leg of our journey one of the planes was forced down in a lagoon near the shore just east of Hué. The others landed. A new engine was necessary, so on we went to Touraine to order a new one from Saigon. While the new engine was en route, the disabled plane was towed up the river to Hué by native sampans, a subchief in each beating a tom-tom for cadence while their families and hundreds of natives trailed behind in boats. The new engine was trucked over a jungle trail at night to Touraine, was in the plane running in just seventy hours from the forced landing, and on its way to Touraine to join the other two planes. The rapidity with which the repairs were made is explanatory of the work of the organization which planned our trip.

OVER THE MALAY PENINSULA

Thence on to Saigon and to Siam, landing in the river at Bangkok. Thinking we were going to be with them for some time, the natives were surprised when informed we were stopping only for one day. However, they wanted to pay a proper tribute and on the eve before our departure invited us to a beheading of two prisoners. We certainly appreciated that hospitality.

Our next flight took us directly over the Malay peninsula to Burma. It was all very wild country, parts of which were inhabited by an ancient race of pigmies, who still hunt with blowpipe and poisoned dart. On arrival at Burma we found a storm from the Bay of Bengal had blown in and clouds covered the mountain tops. We had a great time picking our way through. One plane was caught in a down current of air and barely escaped crashing in the jungle. It rained until we got to Rangoon, where we remained several days because of repairs to one of the planes, damaged by a native junk boat during the night.

We flew through rain most of the remainder of the way to Calcutta, via Akyab and Chittagong. At Calcutta we changed engines and put wheels on in place of pontoons to fly overland to England. As a rainy season was due, we shipped our engines by rail to Karachi and worked night and day in order to depart as soon as possible. We took off from Maidan Park, in the center of the city, on July first.

THE JOURNEY ACROSS INDIA

Our journey across India took us to Allahabad, past the beautiful city of Delhi, on to Ambala; thence across the Sind Desert, where we encountered a sand storm for nearly five hours before our arrival at Multan. We were coated inside and out with sand. The heat was terrific. We were told it was one hundred and twenty-eight degrees on our arrival, which we had no cause to doubt.

July fourth, en route to Karachi, the *New Orleans* had engine trouble eighty-five miles out, due to a valve breaking. Lieutenant Nelson demonstrated his skill as he nursed it on in to the airdrome. Here we put in our new engines and left India behind as we carried on along the Persian Gulf, at times passing over saw-toothed mountains which were so barren that I doubt if even cactus could grow. We stopped at Cha Bar, Bandar Abbas, Bushire, thence over Basra and on to Bagdad.

We were so anxious to leave the tropics and get home that even though we were near some of the wonders of the world, we did not deviate from our course, only stopping overnight at the Royal Flying Corps Airdrome near Bagdad and thence on to Allepo, Syria.

IN CONSTANTINOPLE

Our next flight was exciting as we took on sufficient fuel to fly direct to Constantinople. With this heavy load we were forced to wind our way through the Taurus Mountain following a trail. Often we were completely surrounded by mountain peaks and the passages so narrow that we were forced to go through single file. Over the high plateau, passing extinct volcanic craters, past Konia and suddenly a beautiful city, Constantinople, came into view, with the blue Bosphorous, its great wall and many mosques.

ACROSS EUROPE TO PARIS

After two nights and one day we departed for Bucharest, Roumania, where we spent one night, and continued across Europe over the Franco-Roumanian air route, passing Belgrade, on north to Budapest for lunch and to Vienna. We stayed overnight and then hurried on to Paris via Strassbourg.

As we were thirty-one days behind schedule at Tokyo we decided to work extra hard and to make up the lost time so we could take a one-day holiday in Paris. We arrived on the fourteenth day of July, having picked up seventeen days. Our holiday consisted of placing a wreath upon the Unknown Soldier's grave, a luncheon, a reception at the Hotel de Ville and by the President at his home, followed by a dinner at the Allies Club. On our first eve, there being nothing official planned, a group entertained us at the Follies Bergére. Upon arrival and being comfortably seated, we all went to sleep, which resulted in comments by the papers next day that if such would not keep us awake, what would?

THE ATLANTIC FLIGHT

July sixteenth found us on our way to Croydon, England, thence to Brough on the Humber on the seventeenth. Here we had to prepare for the Atlantic flight, putting pontoons on in place of wheels, new engines and whatever other work was necessary. We had ample time as our supplies had not been fully distributed across the Atlantic.

Our first flight then was to Scapa Flow, where we came in contact with our Navy again, which was to escort us across and render invaluable assistance.

On the first attempt to reach Iceland we encountered fog, and, in attempting to go over it, we were forced to break formation. The *New Orleans* was hit by the propellor wash of one of the other planes and sent down in a tail spin but recovered control just over the water and continued on. The *Chicago* and *Boston* returned to Kirkwall to give out a message of the approximate location of the *New Orleans*. After many hours of suspense we received a message of its safe arrival at Angamasalik, Iceland.

The next day, half way to the Faroe Islands, my plane, the *Boston*, was forced down due to engine failure. We signalled to the crew of the *Chicago* not to land but to send assistance. They continued on and dropped a message to the U. S. S. *Bellingsby*. This news was radioed to the other boats which came to my rescue. Nearly five hours after landing on the sea we were taken in tow by an English trawler. The sea was getting heavier and as we rode over the swells, it nearly pulled our plane apart. So it was a relief when the *Billingsby* relieved the trawler, and towed us a brief time, when they turned us over to the light cruiser *Richmond*, on which we hoped to store the plane. However, in the rough sea it was impossible, especially after the boom dropped, damaging the plane and making it necessary to try to tow it to shore in the Faroes. In this attempt the *Boston* was lost, sinking the next morning.

In the meantime the *Chicago* and *New Orleans* took off for Reykjavik on the west coast of Iceland. There they prepared for the crossing to Greenland. On account of delay, we all became familiar with the city which was a surprise to us all, having a population of over twenty-two thousand, paved streets, electric lights, everything modern, even to taxicabs.

A JUMP OF EIGHT HUNDRED AND FIFTY MILES

A naval aviator, Commander Leighton, and myself flew in and looked over the harbor at Angmasalik, Greenland, and after considerable thought it was decided to fly direct to Friedrichsdahl, a distance of eight hundred and fifty miles.

It was on this flight that many exciting things happened. As they neared Greenland, a dense fog was encountered. Signor Locantello, the Italian aviator, started with them. When he came into the fog, he turned back out of it, and landed at sea. He was rescued five days later by the U. S. S. *Richmond*.

FOG AND ICEBERGS

When the others met the fog, they realized that the sea was too rough for them to land, and that they did not have sufficient fuel to return to Iceland, so went on. They remained low over the water and about eighty miles out encountered floe ice, then icebergs, with which they played tag. Flying side by side, swerving from one side to another to miss an iceberg, now and then jumping over them, one came in view too suddenly to turn. This one was so huge that one plane went one way and the other in the opposite direction. Lieutenant Nelson in the *New Orleans* made a circle to permit Lieutenant Smith in the *Chicago* to go on and prevent a collision. Traveling at about ninety miles per hour and the visibility about three hundred feet, they kept on keen edge every moment. As they neared and rounded Cape Farewell they came out of the fog only to find another bank at Friedrichsdahl. Locating the harbor by mountain formations, they found a rift in the fog, Nelson arriving thirty-five minutes after Smith. That evening was celebrated aboard a Danish revenue cutter.

On to Ivigtut and across the Newfoundland, down the coast to Picton, Nova Scotia, where Ogden and I rejoined them with the *Boston II*. Thence down the Maine coast, where we were worn out dodging fishing boats, small islands and buoys, in the worst fog we had found anywhere. We finally took refuge at Mere Point, Casco Bay.

ARRIVAL AT BOSTON

The next day we arrived at Boston Airport. During our trip we were totally ignorant of the enthusiasm here in the States, but readily realized it upon finding a huge crowd there to greet us, in addition to the Army and Navy officials.

Leaving our pontoons for wheels we flew overland to the end of the trip. Everywhere we found the same enthusiasm. New York, Washington, D. C., where President Coolidge waited several hours with his entire cabinet in a drizzling rain, Dayton, Ohio, Chicago, and all, on every stop to Seattle. We found it necessary to post policemen outside our doors to prevent souvenir hunters from stealing our clothes. As we were pushed through crowds, people reached over, putting their fingers lightly on us and shouting, "Ah! I touched one."

THE END OF THE JOURNEY

Receptions everywhere, we answered questions it seemed by the millions. Another surprise awaited us at the end—a monument erected in our honor.

We were one hundred and seventy-five days en route, making a total of seventy-five flights on sixty-four days of flying. Our total flying time was three hundred and seventy-five hours.

Our demonstration already has realized a benefit, in my belief, as it has caused many new air routes to be opened and put to use, principally abroad, however. It is quite a satisfaction to repeat the words of an address of welcome given to us on the completion: "In the future many flags will be represented as airplanes fly around the world, but only one nation can claim the honor of having her flag carried around the globe by air first, and that is the United States of America."

The First Trans-Atlantic Flight

By Lieutenant Walter Hinton

Pilot on the *NC-4*, the First Plane to Cross the Atlantic

ADMIRAL TAYLOR'S suggestion of August 25, 1917, called for a machine able to fly across the Atlantic. The idea of such a crossing had never lapsed during the preliminary months of design and construction, which preceded the first flight of the *NC-1* on October 4, 1918. Now, in December, 1918, it revived with fresh intensity.

"If there is to be no fight, there will at least be a flight."

Such, in effect, was Navy sentiment. For already, with the beginning of winter, Navy officials laid their plans for an attempt to fly to Europe to take place early in May of 1919. Route, seaplanes, commanders, fuel, and auxiliary service were carefully discussed in Washington, long before the "Daily Mail," across the water, had made an offer of £10,000, which was to send half a dozen British machines to Newfoundland to select their fields and build their hangars in the fog and melting snow.

The American Navy could not well have hesitated between the two possible methods of crossing the Atlantic. One way, the world knows, was to make the flight a great sporting event. The other possibility was to keep it, as closely as possible, to a well-organized scientific expedition.

Obviously the American Navy could not, even if it would, choose sport in preference to science. Dignity and efficiency forbade that. Its pilots were sent out, not on their own initiative, but by official order and under official endorsement.

Eastward Ho!

From Far Rockaway, L. I., to Trepassey, Newfoundland, is a distance of approximately 1000 nautical or 1150 statute miles.

Three *NC* planes had all covered this distance by May 15, the *NC-4* arriving six days after the *NC-1* and the *NC-3*. Engine trouble had made it advisable for her to descend near Cape Cod. She alighted on the open sea, taxied for eighteen hours, and brought herself, as efficiently as if water and not air had been her natural medium, to the Naval Air Station at Chatham. By May 10 she was ready to resume flight. Favorable weather at 11.17 A.M. on May 14 found her receiving a message from Assistant Secretary of the Navy Roosevelt: "What is your position? All keenly interested in your progress. Good luck!" And replying three minutes later, "Thank you for good wishes. *NC-4* is 20 miles southwest of Seal Island, making 85 miles per hour."

Conditions at Trepassey not having been propitious for flight, the *NC-1* and the *NC-3* had been delayed there since their arrival on the evening of the 9th. When the *NC-4* arrived she was immediately overhauled. A new engine was installed, three new propellers were attached, and a general overhauling given the seaplane. On May 16, 1919, all three boats were ready to start. They had fulfilled almost to the letter the suggestion of their April 14th orders that they take advantage of the May 14th moon.

The *NC* crews prepared for flight, slipping their air togs over Naval Aviation uniforms. They wore a combination of silk socks under woolen ones, and fur-lined boots and hoods, but used no electrically heated suits.

Trepassey had poured out her population, native and transient, to witness the departure. The town was as empty as an inverted pitcher. Shore and water were darkened with spectators. On the destroyers were crowded Naval officers, sailors, and newspaper correspondents.

Now they waited the word. "Let's go!" shouted Commander Towers. The motors of the *NC-3* began to revolve. In the bright sunlight—it was six o'clock New York time—the three vessels taxied out, maneuvered a few minutes, and then, the *NC-3* in the lead, shot forward for flight. They left at 6.06, 6.07 and 6.09 P.M., the *NC-1* bringing up the rear.

The course was the open sea. There were no rivers or railroads or coastlines to follow, no towns or lakes to identify. Only a line of sixty destroyers, clicking advice and brandishing stiff antennae of light, would break the empty sweep of that sea.

In the late light of those first hours the water lay smooth. The deflected glow of a sunset filled the sky. Icebergs swam by under the wings of the flyers.

WITH THE *NC-4*, SIX HUNDRED FEET ABOVE THE SEA

Let us imagine ourselves in the pilot's cockpit of the *NC-4* as she takes her way eastward six hundred feet above the sea.

The fading light shows us the *NC-3* ahead, rising and falling in the changing air as if on the slow, high waves of an invisible sea. All sound is merged into the roar of four motors. All about us is a sense of space, open, illimitable, so vast that we seem shaken free forever from the earth, and winging in a new world whose laws are alien to all we have known.

Before us is the board of instruments, clocks, compass, oil and water meters, altimeter, tachometer, inclinometer. Below us and to the rear works the wireless operator. Far back in the hull, under the wings, are the mechanicians.

The planes fly on through a growing darkness. The *NC-3* disappears. We have switched on our lights, and send a message to her asking that she turn on hers. No response. Something seems to be wrong. We look back for the *NC-1*. Never distinct, she, too, has disappeared. We are alone, with 1185 nautical miles still to go.

The sky is now dark, utterly dark save for stars. These and the line of ocean where the stars cease give the pilot his only means of orientation. The engines labor on. Each of the twelve exhaust ports, unmuffled, sends out its jet of flame as the burnt gas is expelled. In the vastness and invisibility of the time and place those red tongues, each proclaiming the adequacy of its cylinder eight hundred and fifty times a minute, are marvellously reassuring.

Now ahead of us, a swift, narrow stem of flame runs up the sky, bursts into flower, and scatters luminous petals across the night. The star shell of a destroyer! In a minute gemlike lights gleam below, and an illumined vessel tells her number and gives us our location. Check her off the chart!

The plane, winging her way at a thousand-foot elevation now, catches on wing and motor gleams of silver thrown from the east. An edge of moon has appeared. Soon the whole disc has arisen, flooding the world with pale beauty. The pilot, visibility increased ten-fold, relaxes with a sigh. To the south, however, a close surprising shape brings him back to tenseness with a jerk. Another plane flies close, too close for comfort. The *NC-4* veers aside from the friendly but dangerous shape, and is soon alone once more. Probably she has passed the *NC-3*.

So we ride until the day dawns faintly. The story for the three boats is the same. Everything has gone well. The destroyers have been checked off as regularly as railroad stations; the motors have functioned as faithfully as if they reposed on test blocks; the pilots have relieved one another every half or three quarters of an hour. Toward morning there have been sandwiches and coffee, welcome after the long cold nervous time of comparative inaction.

UNCERTAINTY AND DIFFICULTY

Now, however, was to come a period of difficulty.

The *NC-4*, says her commander's record, passed destroyer *No. 15* before trouble began. Ahead of this vessel appeared what seemed an area of rain, but proved to be fog, driving in the same direction as the *NC* herself. Picking up destroyer *No. 16* in spite of poor visibility, the *NC-4* missed *No. 17*, and for a time flew confusedly. The boat seemed to be making a steep bank, the compass whirling aimlessly about, and visibility merging into a gray blanket of moisture. Finally, however, she merged from the fog, and flying at 3000 feet in sunshine and blue sky, seemed to have outwinged her difficulties, though a white plateau of billowing vapor below showed that the surface of the ocean was still shrouded in mist. Clouds and fog soon appeared above as well as below, and the *NC-4* sent inquiries as to surface conditions. Destroyers *No. 19* and *No. 20* reported discouragingly, but *No. 21* announced that there was a ten-mile visibility, and the flying boat descended. Flying low, her commander soon saw what he thought to be tide waves. Suddenly, above one of these waves appeared a dim line of rocks. They had found Flores! Delightedly they skirted the coast.

Elated, reassured, the crew thrilled with revived hopes. There was sufficient oil and gas left to make Ponta Delgada. Why stop at Horta then?

Their jubilation was brief. Dense fog closed in again. They missed destroyer *No. 23*. "No Ponta Delgada for us today; any port would look good."

They had begun calculations as to the course necessary to find land, when a hole in the fog disclosed the northern sweep of Fayal Island. Horta, to the south, must be just around an aerial corner! The plane flew down the coast, and, pitching through rough air which "tumbled down from a mountain," made a landing in what they hoped was Horta Harbor. They were soon convinced that it was not. No matter! Rising again, they caught a glimpse of the U. S. S. *Columbia*, visible between gusts of obliterating fog. In a moment they had reached her, and swept down at the end of fifteen hours and thirteen minutes to the completion of the first and most difficult stage of the great crossing.

"We passed," says Commander H. C. Richardson, one of the *NC-3* pilots, "through five hours of rain squalls and fog, so thick at times as to make it impossible to see the horizon or the surface of the ocean."

After this experience, with fifteen and a half hours of travel behind her, the *NC-3* was contemplating a landing forty-five miles southeast of Fayal. The *NC-1*, last of the three to start, held her original position with reference to the others.

"We did not meet any trouble," says Lieutenant-Commander P. N. L. Bellinger, U. S. N., "until we got into the fog at 11.10 A.M. (Greenwich time), Saturday, when we were near Station 18."

Once in the fog, the *NC-1* lost her bearings and decided to alight. She did so at 1.10 P.M. She was then about one hundred miles west of Flores. The position of the *NC-3* almost two hours earlier has been noted. Both vessels were at the gates of the Azores. Their motors were in perfect condition. They had adequate supplies of fuel for several hours further flight. Fog alone prevented them from reaching Fayal, or even Ponta Delgada.

In landing, however, both boats found the ocean heavier than they expected. They sustained damage from high waves which made the resumption of flight impossible, even if a take-off on such a heavy sea could have been managed. The *NC-1*, after taxying on the surface for five hours, was discovered shortly after 6 P.M. (Greenwich time), by the *Ionia*. At 6.20 P.M. the *Ionia's* boat took off the crew. An attempt was made to tow the seaplane, but the line broke, and after a time the first Navy-Curtiss flying boat disappeared beneath the waves.

Meanwhile, the twelve-foot sea on which the *NC-3* came down, damaged hull, struts, and control connections. It was apparent that she could not take the air again. Her radio system, though allowing her to receive messages, could not effectively send them. Though the crew fixed her position as forty-five miles southwest of Horta, the wind forbade an attempt to taxi in the known direction of Fayal. The only possible course seemed one with the wind, *i.e.*, eastward, which, it was calculated, would carry the *NC-3* to San Miguel.

Night came, and the boat was buffeted by wave and rain. One of the elevators, badly damaged, had to be cut loose. The crew took turns steering, those off duty attempting to sleep. With morning, in the twenty-second hour of surface riding, the left wing tip was washed away. One of the crew crawled out on the right wing and clung there, deluged occasionally by waves, to keep the left wing from being submerged. Radio messages were received telling of the rescue of the *NC-1* crew, but also disclosing to the *NC-3* that those who were searching for her were looking west instead of south of Flores. Rescue, then, was improbable. The *NC-3* must save herself. A crew with radiator water to drink and scant supplies of chocolate and salty sandwiches, must bring a damaged hull for hundreds of miles over seas, running often as high as thirty feet. Could they do it? Could the vessel, built primarily for aerial travel, make such an ocean voyage?

OUT OF THE FOG

They were riding the swells with these thoughts when in middle morning, across a sea clear of fog, the form of a high mountain, its head hidden in clouds, showed ghostly in the distance. Pico! the 7000-foot volcanic cone of the highest peak in the Azores undoubtedly lay before them. Observations, feverishly taken, checked with the testimony of their eyes. They were forty-five miles southeast of Fayal.

Should they make directly for the land they saw? The tanks held a two hours' supply of fuel; the idea was feverishly alluring. Sanity, however, whispered the futility of such a course. They could not safely ride against the waves and wind. Their only road lay eastward, through another night of tossing, toward Ponta Delgada. They must watch the tangibility of that great mountain die away as they planed off toward an island they could not see.

Who can describe those next twenty-five hours? Coasting backwards over the great waves, beaten by rain, sleepless and hungry and worn, the five endured more than even they can tell.

They were blown southward for a time. They lost a second elevator. The right wing float threatened to come loose. Officers trained to use the most advanced navigating instruments trailed canvass buckets over the edge of the hull to assist in steering their craft.

Constantly, however, observations showed an increasingly favorable position. At length they calculated that they could make Ponta Delgada in two hours. Then land appeared—farms, vineyards, roads, a lighthouse! Finally the U. S. S. *Harding* became visible, racing toward them. But they did not want help now.

"Stand aside!" they signaled

GLORIOUSLY TRIUMPHANT

They taxied over the breakwater and into the harbor. Crowds lined its shores. Whistles, sirens, guns, and voices made a bedlam of the afternoon air. Flags waved gaily, photographers in motor boats raced about. The scene was one never to be forgotten, and our relief from the long tension and our feelings cannot be described.

So ended a fifty-two-hour, 205-mile journey over the open sea. It had been made in a flying boat by officers of the American Navy.

The gloriously battered *NC-3*, though making port, was unable to continue the voyage to Portugal. The *NC-4*, arriving from Horta at Ponta Delgada on May 20, went on alone.

A faint but penetrating hum grew in the sunset over Lisbon. It was an alien sound to the old city beside the Tagus. It seemed to have no location, but to diffuse itself through the sky, growing in volume and intensity.

Suddenly with a jet of steam the U. S. S. *Shawmut* and the U. S. S. *Rochester* sent a shrilling answer.

"There she is!" came a voice, cutting the great spaces like a thin ray of light. Sirens, guns of Forts San Julian and Bugio, cannon of Portuguese warships, and the shouts of innumerable men on land and water echoed from wall to wall of the natural amphitheatre. A silhouette became visible against rosy banners of cloud. It gathered definite shape; the noise of its motors became loud and thundering. With a gleam of wings the *NC-4*, completing the first flight ever made by men across the Atlantic Ocean, dove in a wide spiral toward the river and came to rest upon it as lightly as the vessel of a dream.

There was a moment's pause. Lisbon, lying in the black and gold of a dying May 27, 1919, seemed to ponder on the achievement. Did an intangible sadness, a regret, tinge the moment for her? Once she had her heroes and her navigators. Somewhere among her terraced hills and her half a million people, walked the ghosts of John the Great, Vasco da Gama, Cabral, Prince Henry the Navigator; of Amerigo Vespucci, even-name-giver to a new continent. And here, in 1709, in the Palace of the Indies, occurred one of the earliest aeronautical demonstrations. Bartholomeo-Lourenco de Gusmao had on that day sent a globe to the ceiling of the Hall of Ambassadors before the assembled court—a ball "borne up by certain materials which burned and which the inventor himself had ignited." Where were the explorers now? Where were those who inspired to conquer the air, to fulfill Gusmao's promise of a "machine competent to journey through the air faster than over land or sea, to carry messages five or six hundred miles a day to troops, and even adequate to explore regions about the poles?" They were there, but they were invaders. They awakened Portugal from a dream, shattering her peace with the thunder of their engines and the flash of strange and amazing wings.

A voice broke the silence. "Tell the *Shawmut* to direct her searchlights westward into the wind, so as to shine upon the water."

A sword of light swung into the dusk and found the *NC-4*. She taxied toward the *Rochester*. A motor boat from the *Shawmut*, hovering in wait, took off the crew. They went up the *Rochester's* gangway, smiling men whose faces were tinged with the gray of a long-sustained and nervous effort.

Tumult and cheering, thunderous cheering, until an abrupt hush cut it sharply, like an invisible knife.

"O say, can you see—"

The anthem of a young but great republic filled the air. The flyers, haggard but happy, stood rigid at salute. About them flags, lights, and uniforms gleamed motionless and dazzling out of the night. The music swelled upward into the dome of darkness, a triumphal hymn of the west sending its warriors east to free men from an impeding nature as it had lately freed them from men. Coming out of the sunset, the *NC-4* had brought the sunrise of a new and great human achievement.

The *NC-4* had a comparatively simple time of it. Two thousand pounds lighter than when she left Newfoundland, she succeeded in taking off from heavy swells at the harbor mouth. Though off her course sufficiently to lose destroyer *No. 3*, she picked it up again and kept it the remainder of the way. Rain and mist were encountered, but did not interfere seriously with the ninety-three statute miles per hour which she made. The voyage was almost a triumphal parade.

There remained only one more accomplishment—the flight to Plymouth. Here, on May 31, they were to set foot on the shores of the harbor from which the Pilgrim fathers took ship for a new world three hundred years before. Here, after a flight of 3936 nautical or 4526 statute miles, made in flying time of fifty-two hours and thirty-one minutes, congratulations of British and American officials were received.

In the days of Columbus it took seventy-one days for his caravels to cross from Palos to the Bahamas. The *NC-4* went from Rockaway to Plymouth, more than twice the distance covered by Columbus, in less than seventy-one hours. Ocean navigation by steam became an assured success by the voyage of the *Savannah* May 24, 1819, from Savannah, Georgia, to Liverpool, England. Both steam and sails were used in this vessel, and the distance was covered in twenty-seven days. The fastest ocean passage by steamship between New York and Plymouth, 2962 miles, was that made by the *Kronprinzessin Cecilie* in five days, seven hours and twenty-five minutes in September, 1909.

The fastest Atlantic ocean passages, recorded by the Cunarder *Mauretania*, were made in four days, ten hours and fifty-one minutes, and in four days, thirteen hours and forty-one minutes in 1909. Ten years later the *NC-4* crossed from New York State to England by a longer route, in two days, seven hours and thirty-three minutes of actual flying time.

It has shown that the Atlantic, like other barriers to the growth of aviation, can be broken down; that, in a word, flight has no limit in the tasks it may choose to accomplish.

The greatest service rendered, however, was that of pioneering. The Navy-Curtiss boats charted a course through new regions. They proved that flight itself offered no problems. They indicated what the real problems were: ability to fix position by instruments, ability to fly through fog to an unseen goal, ability to alight on the ocean in case of need, and to sail the ocean successfully when once upon it. These problems they not only indicated—they partly solved them. They gave the promise of a successful world-voyaging aircraft. Therein lies their triumph. It will increase in significance with years.

Navigating the Plane

By Brice Goldsborough

Vice President Pioneer Instrument Company

RAYMOND ORTEIG, owner of the Hotel Brevoort, New York City, some eight years ago offered a prize of $25,000 to be given to the first to make a New York-Paris non-stop flight.

There have been several recognized trys, and the last one attempted ended disastrously when the plane piloted by Rene Fonck, the Premier French Ace, failed to take the air.

It is interesting to note that in almost every field of endeavor failure is seldom disheartening, and usually just unfortunately delays progress that will ultimately manifest itself. So it is with the long-looked-forward-to New York-Paris non-stop flight. There seems little now standing in the way of the successful completion of that event in aeronautics. Spanning the 3600 mile stretch between New York and Paris is not a formidable undertaking at this time when one considers the progress made in the aeronautical industry since its birth at Kitty Hawk, N. C. in 1903.

It is a recognized fact that airplanes, and motors of present day design, are capable of carrying sufficient fuel to permit them remaining in the air for the period required to negotiate a distance greater than 3600 miles. There are several very important considerations, however, that must not be ignored though offhand they may seem relatively unimportant.

The premise of this discussion is limited to the problem of navigating an aircraft from New York to Paris.

The Art of Navigation

The navigation of a ship, capable of carrying sufficient fuel to permit of its remaining in the air under its own power for a period of time necessary to complete a voyage of some 3600 miles, is and isn't exactly a problem.

It isn't likely that the crew of the ship will be made up of weaklings, either mentally or physically, because in the first place almost every one recognizes that the flight is not just a matter of pointing a ship toward Paris, and after forty hours or so having Eiffel tower loom up on the horizon; and in the second place endurance physically means that the crew, either two or three, will be pretty much on the job for a stretch of some forty hours, more than likely without sleep.

Navigation of slow moving ships, that go down to sea, is an art that has been practiced for centuries, and to these century-old methods we must look for some of our methods in air navigation.

But as the methods changed somewhat when we changed from sail to steam, so must we change from steam to aircraft. There is in aircraft navigation a composite of both the sail and steam; wherein the sailing vessels were at the mercy of the winds and currents of the several seas, and wherein their directions and speed of sailings were limited pretty much by the directions and force of the winds, they after a fashion reached their port but not always on schedule. Attempts to keep a schedule were more successful by innovating the steam driven seacraft, although affected similarly by the wind and sea. Aircraft, however, is capable of making port, no matter from which direction the wind may be blowing whether helping or hindering forward progress; and during these impending flights from New York to Paris strict adherence to a schedule will be very, very necessary.

THE GROUND WORK

The ground work in preparation for important flights of this nature entails some little effort.

The navigator must first determine what his course will be. On the Hydrographic Office Chart of the North Atlantic Ocean, a great circle track between New York and Paris has been plotted. The great circle track is the shortest distance between two points on the earth's surface.

Just in passing, it might be interesting to note that great circle flying is not the usual method of ordinary navigating of aircraft over land, because on the airways as established, the distances between points are very much shorter, and in these shorter hops pure triangulation can be resorted to without appreciably lengthening the course.

This latter method has been well-worked out. and has been proven quite conclusively by such important flights as the one recently completed in the Josephine Ford, the three-motored Fokker that Commander Byrd and Floyd Bennett flew over the North pole. Floyd Bennett, Bernt Balchen, and J. McPhail made up the crew-carrying representatives of the Department of Commerce and the Guggenheim Fund for the promotion of aeronautics. This particular flight was made up of forty-four legs for a total distance of some eight thousand miles but was not a non-stop flight; the longest leg between take-off and landing was not more than 400 miles. The navigating method used for this flight was typical of that practiced in most cross country flights over land, and the same that was used by the writer who navigated the winning ship in the last Commerical Reliability Tour. This method was tried out and perfected by Charles H. Colvin, president of the Pioneer Instrument Company. The use of this method involves only a few of the instruments necessary for "Great Circle sailing," primarily, good maps with fields correctly located geographically, and some means within the ship to check speed, distance, direction, altitude, attitude of the ship and time.

The World Flyers, however, had to use both methods, that is, the simple cross country and the more involved Great Circle method.

However, to get back to the New York-Paris flight, the course as plotted indicates the ideal route to be followed. The actual calculated distance is 3135 nautical miles on the great circle between Mineola, Latitude 40° 44′ 18″ N., Longitude 73° 37′ W. and Paris, Latitude 48° 50′ N., Longitude 2° 20′ E.; 3135 nautical miles equals 3610.1 statute miles.

For the purpose of conveniently establishing checking points and courses, in ship's parlance, a day's run, legs 300 miles long, have been plotted. These legs do not exactly follow the great circle, but rather describe the sides of a polygonal figure and are sufficiently accurate for all practical purposes.

The initial course of departure is true 53° 51′ but it is noted that angular relation of the magnetic field, between the meridian and the magnetic pole, is from 10° to 20° W. This variation or declination must constantly be kept in mind because in aircraft, as in maritime vessels, the compass is the only means known showing continually a given direction, and inasmuch as this variation is hardly the same for any two locations, the importance of knowing its magnitude is paramount.

THE COMPASS

A word about compasses may not be out of order. There have been several types of magnetic compasses developed for aircraft use, but probably the outstanding contribution to the art in way of compasses is the well-known earth inductor compass, invented and designed by Morris Titterington, chief engineer of the Pioneer Instrument Company. This latter compass has been demonstrated by use on such important flights as the Round-the-world, Rodger's *PN-9* San Francisco to Hawaii, Byrd's Polar Flight, Wilkin's Arctic Expedition, the Commercial Reliability Tour, and scores of others. The great advantage this particular instrument has over the ordinary magnetic compass, is that it can be remotely located in an area free from local magnetic influences inherent in every airplane, due to the motors and to the magnetic material of which it is constructed.

The indicator of direction which in itself is not affected by local surrounding fields may be located so that it can be easily observed by the pilot.

A controller, by which the earth inductor compass is set to the desired heading, is placed where it may be operated by the navigator. This instrument has dials, upon which are set the direction to be flown, and the pilot has only to watch a meter, which shows any departure to left or right of the proper course.

INSTRUMENTS AND APPARATUS

So that the reader may more clearly understand the flight as it unfolds over the plotted great circle track, there follows a description of the several instruments and apparatus the navigator must use to determine his direction, position, and kindred other things he must know at all times.

The power plant instruments are not so much the concern of the navigator, but the pilot must know whether he is getting the most economical efficiency from the motor or motors, and to know this, the speed of the motors as indicated by the tachometers is essential. Usually, the power plant instruments are grouped so that an occasional glance directed away for an instant from the compass or compass indicator and the turn indicator, will impart to him information that the oil pressure and oil temperature, as indicated by two small gauges, is correct for the particular motors used for the flight.

The actual navigating instruments, however, are the compasses already described, a turn indicator, which is an auxilliary instrument used in conjunction with the compass for indicating small divergences from a straight course (in itself, the turn indicator has no sense of direction but will indicate when on a given course any departure from that course); an air distance recorder which in its function is not unlike the Taffrail logs used by ships in the maritime service. While not giving the distance made good over the ground it records counter fashion the number of miles made good in the air, and this information is very helpful when checking position. Unlike the air speed indicator, which shows the average miles per hour at all times, this instrument keeps a record of the miles flown.

The air speed indicator is not alone simply a measurer of speed, but is a telltale as to the performance of the ship, indicating to the pilot whether he is maintaining steady, constant flight, or whether he is approaching a condition near the stalling point of the ship, and indicating to the navigator the average rate of speed the airplane is making with relation to the air. It is important to know the ground speed as well as the air speed, and the particular instrument used for determining this has incorporated in it a means of measuring the drift angle. The drift, as it is termed, is the movement of the airplane in directions apart from the forward motion produced by the motors. The ground speed is obtained by a visual method. The observation of an object on the ground, or the smoke from a smoke bomb at sea through the ground speed meter, will give you this if you know the altitude above that object. The altitude is readily obtained from an altimeter on the instrument board. Knowing the altitude, you have just to set a pointer on the speed meter at the height indicated by the altimeter, time the transit of the object between the two set pointers and read directly from the speed timer the ground speed in miles per hour.

The drift meter is arranged in such a way that visual observations of an object on the ground are possible. The vane index is a pivoted arrangement that passes over an arc divided in degrees. Normally, the vane is neutral in the fore and aft plane of the aircraft. If when sighting through the meter the object appears not to parallel the vane index, the vane is moved until a parallelism is established, and once this condition is satisfied, the angle of drift can be obtained from the arc. The drift angle must be considered at all times since it measures the difference between actual and apparent line of flight. As an example, the magnetic course flown at the departure from New York, on the illustrated Great Circle track, is normally 69°, and if a wind whose velocity of 20 m.p.h. is bearing from the west on a magnetic heading of 259°, the drift angle obtained from the meter will be nearly four degrees; then to make good a course of 69°, with a slightly tail wind of 20 miles per hour, it will be necessary to head the ship 4° toward the wind and to fly a magnetic course of 65. In other words, the apparent line of flight will be 65° by compass, but the actual line of flight will be 69° by drift. Since this particular example wind is a helpful one, the ground speed of the ship, if the air speed is 100 m.p.h., will be nearly 115. The exact course and exact distance can be readily calculated by setting the various factors into an instrument called the course and distance indicator, which simply is a mechanical means of solving all triangles.

The aircraft sextant, or octant, and the chronometers have an important bearing on the problem, because through their means it is possible to determine a position of a point or place on the earth's surface at anytime and anywhere, provided it is possible to see any of the astronomical bodies that pervade the celestial sphere.

The sextants and octants used in air navigation differ from the ordinary marine sextants, in that they are fitted with a bubble that substitutes for the horizon. The use of the bubble eliminates the necessity of entering a correction for the height of the observer.

It will be noted that the chart illustrated is divided in sections denoting latitude and longitude. The location of certain points on the Great Circle track are fixed latitudinally and longitudinally, and if from observations it is determined that the ship is not exactly on the course, a new location can be fixed and a new Great Circle can be plotted.

Determination of latitude and longitude during the day is usually done at noon by observation of the sun as it passes the highest altitude on the meridian. This altitude or angle, as measured by the sextant, is the desired meridian altitude. After applying the necessary corrections and subtracting from 90° the result is the zenith distance.

Greenwich time is the accepted time

used in ordinary navigation, and so it is used in air navigation when long flights are engaged in. The chronometers are kept at Greenwich time and from data published in the Nautical Almanac, the sun's declination can be obtained for the particular day of the observation. The result of the algebraic sum of the declination and the zenith distance will give the required latitude, the longitude being merely the difference of the time between high noon or 12 o'clock which is the local apparent time at the point of observation, and the time as indicated on the chronometers. Each minute of time equals one degree of longitude.

The above covers the determination of latitude and longitude at noon but with care and some calculation these observations may be made at any time the sun can be seen.

At night when the stars can be seen, similar observations can be made, and since position must be known, this position can be established through the medium of these astral bodies. You know approximately where you are from previous observations, so in this case it is essential to select a bright star that is near or about to pass your meridian. The identity of the selected star must be established without doubt.

Having determined the local apparent time of the meridian passage by the difference between the right ascension of the sun and star, thence the mean time, the process following is exactly the same as for the sun.

LATEST METEOROLOGICAL INFORMATION NECESSARY

The several instruments the navigator must use have been briefly described, but in addition he must have the latest meteorological information to determine closely the best time to make the flight, so that he may be able to take full advantage of helpful winds. He also must have nautical tables, almanacs and lists of radio compass stations. This published information is available and indispensable.

The radio apparatus is an important part of the equipment, if used only for communication purposes. However, it also is a means of helping to establish the all-important position of the ship, by obtaining cross bearings between two known stations ashore.

Having thus described the incidental equipment that the navigator has as aids, and equipment he could hardly hope to do without, the navigating of the course follows.

NAVIGATING THE COURSE

The navigation in this discussion must of necessity be hypothetical because no particular date is set for the proposed flights. However, they would well be made during the months of May, June or July, not alone for the comfort of the personnel, but at that time of the year the prevailing helpful winds known as the "westerly trades" in this latitude predominate.

We will assume for the sake of argument that it has been decided to leave Mineola at the break of dawn so that our arrival in Paris be made during the daylight hours. Usually with the dawn comes a breeze that will help materially in taking the heavily loaded ship in the air, and besides, too, the pilot must be given an even break, his biggest job being all in the first minute, the rest so far as he is concerned being more or less routine. Once in the air, and I say that advisedly, the ship is headed rapidly on a course that bears across Long Island Sound. If the departing time is, say, 5 o'clock, then after four hours at one hundred miles an hour the western shore line of Nova Scotia should loom up. Since this shore line is directly on the course, it isn't likely that an off course error will enter into the problem. But before reaching this coast line, it will be noted that the original compass course of 69° for the first leg has been changed to 79° at the beginning of the second leg, to take care of the bend in the Great Circle. Consideration of the wind has not been taken although an assumed wind, of the direction and force as described previously, would materially help the ground made good. After following the coast up, and having arrived at a point off Prince Edward Island, it will have been found that the air distance recorder shows less than the six hundred miles made good, because the wind has helped at the rate of some fifteen miles per hour, and as a result a ratio is established which will help in checking position later.

Local time changes one hour each 15° of longitude, and now that we are nearing Longitude 60, we have gained one hour so that the local apparent time is about 8.45 A.M. The hop from Prince Edward Island, over a point on Cape Breton, to the mainland of Nova Scotia on a new course of 88°, plus or minus the observed drift angle, brings us to the beginning of the fourth leg.

The flight up to this point has given the navigator ample time to have checked and put in use all the instruments necessary for the continuation on the course. He would have been able to have checked his position from time to time and to have gotten well set for the long hop over sea.

The local apparent time, at the point where the ship will leave the mainland of Newfoundland, will be one and one-half hours less than the time at the point of departure. At the rate of one hundred and fifteen miles per hour, there will have been elapsed less than ten hours for the thousand miles.

There remains now about sixteen hundred miles of flying, and about fifteen hours in the air before the coast of Ireland is sighted. Twelve hours of this time most certainly will be spent in darkness, but if the time selected for the flight be during the full of the moon, they will experience the romance of moonlight on the ocean.

This distance between Newfoundland and Ireland just about equals that covered by Byrd and Bennett on their flight over the Pole and return.

Once the coast of Ireland is sighted, which will be sometime during the morning of the second day out, the remainder of the flight will be comparatively easy, but the big problem that the navigator has to contend with, will be constantly checking and rechecking by observations on the moon and stars to assure himself at all times he has not departed from the Great Circle track. Variation in direction and magnitude of the wind will tend to keep him off the true course, and where his important job comes is, as in the beginning, knowing where the ship is at all times, so that when necessity arises to change his course there will be no question in his mind.

And since these flights will not be attended by positioned ships, because this course lies well to the north of the regular steamer lanes, the success of a New York-Paris Non-Stop Flight will reflect untold credit on the design of the ships and motors, on the endurance of the pilot, and on the skill of the navigator in using modern navigational instruments and equipment.

Meteorology and Its Application to Flying

By Willis Ray Gregg, A.B.

Meteorologist in Charge of Aeronautical Division, United States Weather Bureau

IN a very interesting and attractive booklet entitled "Flight in Literature," Major Ernest Jones shows that, from the earliest recorded times, man has desired, and in many cases has tried, to fly. So appealing to him was the idea of imitating the birds, that he peopled the air with all sorts of winged spirits, and in his imagination even endowed certain legendary leaders and heroes with the faculty of flight.

Early Interests in the Weather

To an even greater extent, perhaps, man has, since the dawn of history and probably for countless ages before, been keenly interested in the weather. The literature of all peoples is rich with weather proverbs, many of which are based on actual observation, although others are largely the result of superstition. The meteorological elements to which most attention was given were winds and clouds, particularly the latter, thus showing a very early interest in the conditions of the upper air. It can hardly be said that flying and weather were closely associated in the minds of these early observers, and yet it seems fair to assume that occasionally one more keen than his fellows, noting the direction and speed of the clouds, may have speculated as to the journey he would take, could he rise to their height and travel in the air currents that were speeding them along.

A really close relationship between meteorology and flying began only with the development and use of the man-carrying balloon. And singularly enough, this relationship was quite the opposite of that existing today. The balloon then provided a means for adding to man's knowledge of the characteristics of the upper air, notable contributions being made, for example, during the classic voyages of Glaisher, Flammarion and others. Now, on the other hand, the meteorologist tells the flier what the weather is along his course, and what changes are likely to occur in that weather during his flight.

During the past quarter of a century tremendous strides have been made in the development of aeronautics, and this development has brought out, to an extent that could scarcely have been foreseen, the necessity of providing for it a more detailed weather reporting service than is required for any other line of human endeavor. The truth of this statement was strikingly brought out during the World War, when extensive and very complete meteorological services for the aid of flying operations were built up by all of the nations engaged in the conflict. Following the War came the necessity for rigid economy and the consequent dropping of much that should have been retained. Aeronautics suffered a most discouraging slump, from which it is only now beginning to recover. With it there was a similar and quite natural slackening of effort in meteorological service, but that, too, has recently received most encouraging support and, unless all signs fail, will shortly be developed in greater detail and far more effectively, as regards frequency, promptness and completeness of reports exchanged along airways, than could have been imagined a few short years ago. This being the present status and the future outlook, it seems worth while to discuss briefly the nature of the service that meteorology can render aeronautics, to indicate what is now being done to make such service effective, and to point out the lines along which future development should proceed.

HOW METEOROLOGY CAN AID AERONAUTICS

The service that meteorology can render aeronautics may be considered broadly under two general headings: (1) Statistical information, required particularly in the earlier organization stages of airways; and (2) current information and forecasts, essential for the efficient operation of airways after they are organized and are working on a regular schedule basis.

1. Statistical information may, for our present purpose, be further divided into two classes: (a) that needed in developing the ground organization, and (b) that useful in determining regular flight schedules.

(a) Under this heading are included such climatological factors as frequency of different wind directions at the surface; average speed of surface winds, classified by direction; frequency of surface winds exceeding selected limiting velocities, also classified by direction; frequency of gusty winds of different directions; visibility; frequency of fog; and excessive precipitation, including heavy snowfall.

As a rule there can be no great latitude in the location of airports, since these will necessarily be near the larger centers of population, and must be within reasonably easy access to them. In these cases little if any use can therefore be made of information concerning certain other climatological factors, not above enumerated, such as frequency and intensity of thunderstorms, violent storms and temperature extremes, since in a small region their variation would be slight.

On the other hand there is often considerable variation in wind conditions, and visibility and occurrence of fog, even within small areas. Wind gustiness is greatly increased by topographic irregularities, buildings, and trees. A region as nearly free from these as possible should be selected. Information as to frequency of different directions and velocities is important in connection with the orientation of hangars, and the layout of runways. Visibility varies materially on different sides of cities, and to some extent the same is true of fog at places along the coasts, or near large inland bodies of water. River valleys and other low-lying regions are on this account to be avoided, so far as possible.

A knowledge of the precipitation characteristics of a place is useful in connection with grading and draining the landing fields. If heavy snowfalls are to be expected, provision should be made for quickly clearing the landing fields, particularly the runways.

(b) Climatological factors useful in determining regular flight schedules include resultant winds at flying levels; frequency of different wind velocities, classified by direction, at flying levels; frequency of widespread storms; frequency and intensity of thunderstorms; frequency of low clouds and fog; visibility; and general character of precipitation.

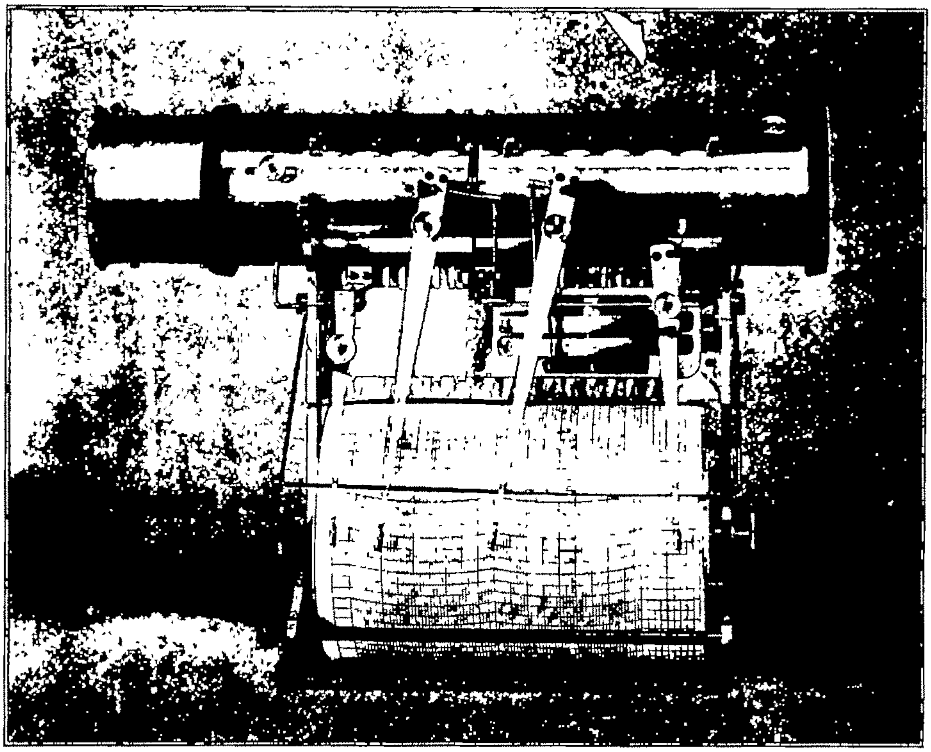
In determining flight schedules for any proposed airway the most important datum is, of course, the cruising speed of the aircraft employed. To this must be added, or from it subtracted, the resultant wind at different points along the route. This corrected value forms the proper starting point or basic datum for schedule fixing. Normally, in the course of a year or any other period adopted, flights would be completed on or ahead of the schedule based upon this value approximately fifty per cent of the time. Obviously this would not be a satisfactory schedule. A guarantee of at least as high a percentage of arrivals on time as is realized by other means of transportation, would seem to be desirable. But, whatever percentage performance is adopted as satisfactory, appropriate time schedules can be determined from an analysis of the climatological factors above enumerated. Of these by far the most important is the frequency of head and cross winds, resolved into components parallel and perpendicular to the course. Since, in general, wind velocities increase with altitude, and since, moreover, in middle latitudes westerly winds are more frequent than are easterly, it would usually be found that the most efficient altitude for regular flying would be lower for westward than eastward trips. Consideration should also be given to other factors, such as the frequency of widespread storms and thunderstorms, low clouds, fog, poor visibility and heavy precipitation, especially snow, some of which might not only delay but occasionally altogether prevent flights.

2. Average values, though essential for the purposes above outlined, are useless in individual, day-to-day flying, which requires, first, frequent reports as to conditions all along the route; and second, weather forecasts for one, two, three, etc., hours, depending upon the length of the flights and the means of communicating supplementary information en route. Fog, visibility, cloudiness, including height of low clouds, precipitation, thunderstorms and squalls, and wind direction and velocity at different heights are the principal meteorological elements concerning which information should be available at all times. Provision should be made for observations of these elements at selected points along a course, taken at regular stated intervals, and for supplementary observations at times when conditions are changing rapidly. A system of communications should be devised and installed so that this information can be disseminated quickly to all airports, and to aircraft in flight, when the latter are equipped with radio.

STATISTICAL INFORMATION NOW AVAILABLE

The climatic characteristics of all parts of the country are known in considerable detail through the records that have been accumulated and summarized by the Weather Bureau at about 200 regular, fully equipped stations, and at about 4500 additional cooperative stations. The data for the latter are less complete than those for the former, but nevertheless include prevailing wind direction, average cloudiness, frequency of fog and thunderstorms, frequency and amount of precipitation, and in many cases temperature means and extremes. The 200 regular stations, located for the most part in the larger cities, have in addition detailed information concerning wind velocities, including the occurrence of gales. In some places that may be selected for airport sites, remote from stations of either class, it might be necessary to make a series of special observations in order to determine the proper orientation of buildings, etc., but it is believed that in general the data now available are sufficient, in large part, for the preliminary or ground organization stage of airways.

For the next step, that is, the determination of schedules, there is an



WEATHER BUREAU KITE METEOROGRAPH

The tube at the top contains delicate instruments attached to the pens which record on the paper sheet the changes in pressure, temperature, moisture and wind at various heights.

abundance of data for all parts of the country east of the Rocky Mountains. These data have been secured by means of kites and balloons, and have been summarized in such a way as to show average and extreme winds, frequency of different directions and of different speeds at all altitudes likely to be used in flying. There is considerable similar information, not yet summarized, for the Pacific Coast States but very little between them and the Plains States, although a study of the air mail records between Cheyenne and San Francisco indicates in some measure the wind characteristics of this region. Data as to visibility and cloud frequency and height are likewise abundant except for the mountain and plateau regions of the west.

Much of the information above referred to has been summarized in one form or another but for the most part these summaries, prepared for other than aeronautical needs, give data concerning meteorological elements of little use in aeronautics, and omit other data a knowledge of which is vital, such as visibility, cloud heights, etc. The Weather Bureau is, therefore, now engaged in preparing, for early publication by the Department of Commerce, Aeronautics Branch, a series of bulletins, one for each State, summarizing in concise form the meteorological elements affecting aeronautics. Besides the State bulletins there will be brief statements describing general conditions at all main airports and at many of the intermediate landing fields along designated airways. Some of these bulletins are practically ready for publication now, and the remainder are being prepared as rapidly as practicable.

EXPANSION OF SERVICE

By far the most important service that meteorology can render aeronautics is that of furnishing up-to-the-minute weather reports for all scheduled flights. Prior to July 1, 1926, this had been done in the case of special projects, such as transcontinental and trans-Atlantic flights, national and international balloon races, etc. The passage of the Air Commerce Act of 1926, and of an appropriation for putting its provisions into effect, has made possible the development of a regular service specially designed for the needs of aeronautics. Action to organize such a service was taken in July, 1926. At that time the Weather Bureau had sixteen pilot balloon stations in the United States proper as shown in Figure 1. It was recognized that there should be additional stations of this type along the airways then in existence or soon to be organized, and the funds provided by the appropriation permitted the establishment of nineteen such stations, the locations of which are also indicated in Figure 1. In some cases it was found possible to conduct this work satisfactorily at the city offices of the Weather Bureau, maintaining contact with the airports by telephone. In other cases, where suitable facilities were available, the balloon work has been placed at the airports owing to their considerable distance from the city offices, or to the poor observing conditions at the latter on account of smoke. This arrangement, having the meteorologist at the airport where he can personally discuss the weather conditions with pilots, is the ideal one, and it will probably be adopted quite generally as aeronautics

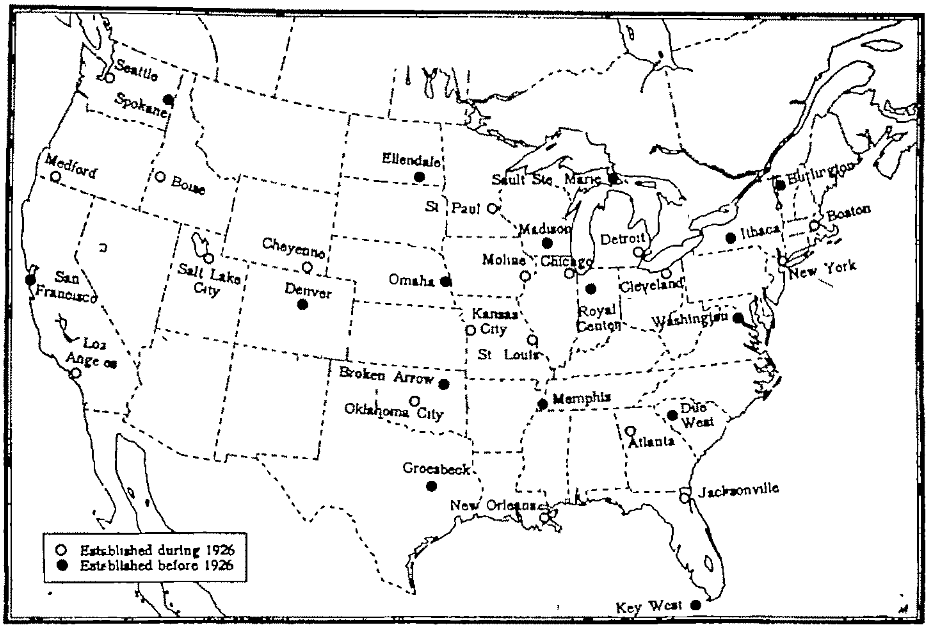
THICK LAYER OF STRATO CUMULUS

Photographed from an airplane. Cirro-stratus above.

develop into a twenty-four-hour service, and as facilities, including quarters, personnel, and communications are made available.

The upper air data concerning wind direction and velocity are important, since they determine at what height a pilot can make the best speed. Many instances have been reported in which this information has resulted in a much quicker trip than would have been possible otherwise, and in one case it enabled a pilot flying from Cleveland to Chicago to establish a new record.

FIGURE 1



PILOT BALLOON STATIONS OF THE WEATHER BUREAU

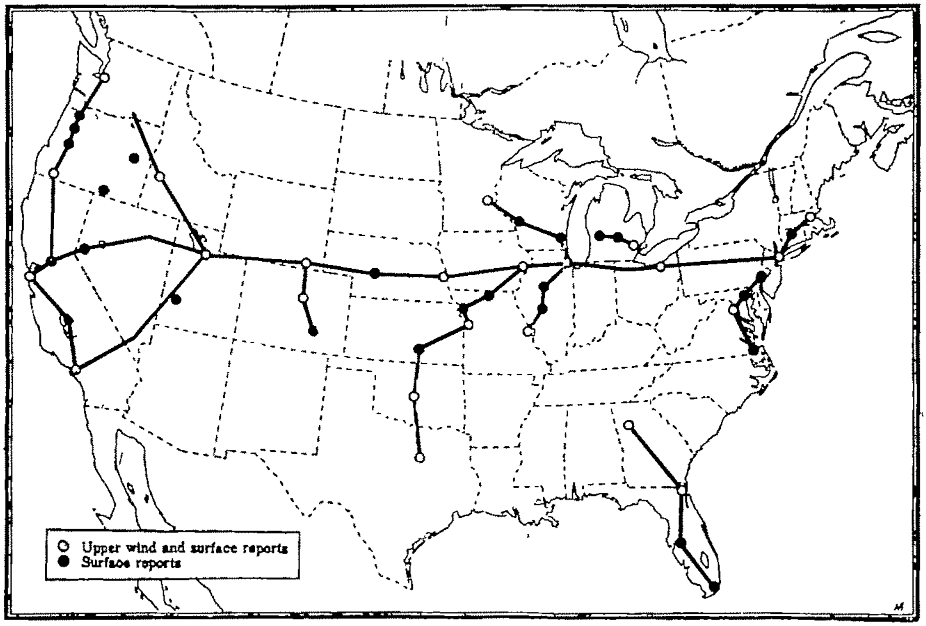
Of greater importance, however, is a knowledge of surface weather conditions, since these determine whether or not any flight at all can be made. Fog, low-lying clouds, excessive rain, sleet or snow, severe thunderstorms, and very poor visibility render flying hazardous and impracticable. Not always will this be so, but in the present state of the art it is. Therefore, particular attention is given to these conditions, not only at the upper air stations, but also at those Weather Bureau stations where observations are confined to surface weather, and in many cases at intermediate points along the airways.

EXCHANGE OF REPORTS

The observations are of little use unless they are made known to pilots at the proper time, which of course is just before he begins his flight. This is an easy matter, so far as the conditions at the starting point are concerned. But naturally he is much more interested in conditions at his destination and at all points along his route. As soon, therefore, as the observing stations were established, steps were taken to inaugurate as complete a system of weather reports as was possible with the funds provided, along all commercial airways that were officially recognized as such by the Department of Commerce. Figure 2 shows these airways. Two of them, Atlanta-Miami and Philadelphia-Norfolk, suspended operations during the winter, but the remainder have maintained very nearly regular schedules during most of the time since July, 1926.

The points between which weather reports are exchanged are also indicated in Figure 2. There are in addition several stations, thus far maintained by the Post Office Department, on the transcontinental airway from New York to San Francisco. The reports on this airway and also those on the Salt Lake City-Los Angeles Airway are transmitted by radio. Those on all other airways are sent by commercial telegraph or telephone, whichever is the more prompt and dependable. Ultimately it is planned to have a system of communications that shall be under absolute control, either radio or leased wire, since otherwise there is bound to be occasional delay when the volume of commercial business is large. However, by "priority" arrangement the present system has for the most part proved to be quite satisfactory.

FIGURE 2



SYSTEM OF WEATHER REPORTS ORGANIZED BY THE WEATHER BUREAU FOR COMMERCIAL AIRWAYS

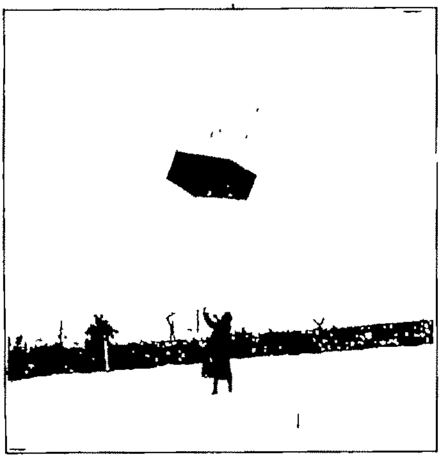
Whether sent by radio, telegraph, or telephone, the reports are based upon observations made as short a time before the take-off as possible and still assure their receipt in time for use. For example, through the courtesy of the Colonial Air Transport officials, the writer recently had the privilege of going by airplane from Hadley Field (about forty miles south of New York) to Hartford, Conn. The start was made at 5 A.M., and a weather report from Hartford was received at 4.50 A.M. As this report came by telephone, it showed conditions prevailing practically at the time of take-off. When reports are sent by telegraph, there is a somewhat longer interval, but seldom is this greater than half to three-quarters of an hour. In all cases the reports give the general character of the weather, as clear, overcast, rain, snow, etc.; ceiling or height of low clouds; visibility; and wind direction and velocity. In some of them pressure and temperature are included; also, upper wind direction and velocity at different levels from stations where pilot balloon observations are made. Reports of upper winds at night are based upon observations of pilot balloons from each of which is suspended a small paper container with a lighted candle inside (a miniature Japanese lantern). With this simple and inexpensive device it is possible to follow the balloons well above normal flying levels. Wherever balloons are used, either day or night, the ceiling is of course easily determined. In some places it is observed by means of a so-called "ceiling light" which projects a spotlight at an angle of forty-five degrees. The observer then paces off, or otherwise measures the distance from the ceiling light to a point exactly underneath the light on the clouds, and this distance is of course the same as the height of those clouds. In the absence of balloons or ceiling lights the cloud height is estimated as closely as possible by eye observation. Visibility is determined by noting the greatest distance at which conspicuous objects (lights at night) can be seen. Wind vane or cone and an indicating or "buzzer type" anemometer readily provide the surface wind data. Temperatures are ordinarily of little concern, but are wanted when they are near and below freezing, since the formation of ice on the planes when pass-

BEGINNING OF A WEATHER BUREAU PILOT BALLOON ASCENSION

Small rubber balloons, filled with hydrogen, are followed, in their ascent, by means of a theodolite The readings of the horizontal and vertical circles enable the observers to construct a horizontal projection of the balloon's path and to determine the wind direction and velocity at various altitudes

WEATHER BUREAU THEODOLITE

Kites and balloons are watched through the telescope, and the angular readings on the circles make possible the determination of wind velocity and direction



BEGINNING OF A WEATHER BUREAU KITE FLIGHT

Attached to the kite is a small instrument known as a meteorograph. Upon a clock-driven cylinder small pens automatically record air pressure, temperature, humidity and wind velocity at various altitudes Wind direction is determined from the direction in which the kite flies

ing through clouds or fog at these temperatures is one of the most serious problems with which the pilot has to deal. Very low temperatures also require proper protection in the form of heavy clothing, or arrangement for heating the cockpit and cabin. Barometric pressure readings make possible suitable adjustment of altimeters. This is important if the pressure gradient is steep, as otherwise an altimeter is likely to indicate a height that is considerably in error, thus making landing a difficult and possibly a hazardous matter.

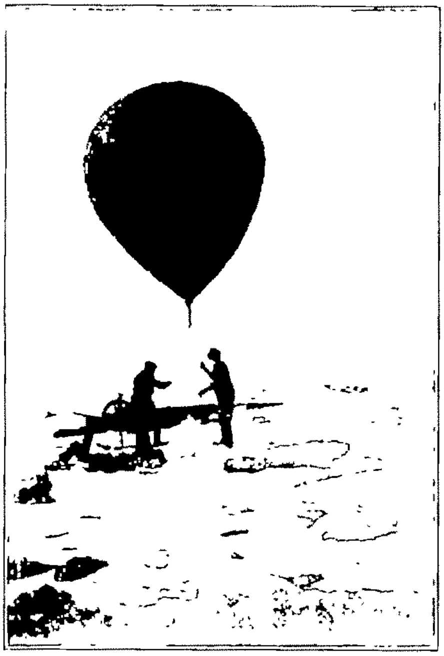
FORECASTS

In the early days of flying, pilots in general paid comparatively little attention to forecasts, unless a very long flight was contemplated. For short trips current reports were deemed sufficient. Many experiences, however, some of them involving considerable hazard and a few of them resulting in accidents, have shown very clearly that a condition reported as existing at any given time may, and often does, change decidedly in the course of so short a period as an hour or so. The pilot, therefore, now wants not only a current report, but also a statement as to what is likely to occur during his flight. This feature of the service has been developed for nearly all of the commercial airways, and will shortly be extended to the remaining ones. The forecasts are what may be designated "short range"; that is to say, they cover specifically the time and route of each scheduled flight, and are issued shortly before the beginning of that flight. They give the forecaster's opinion as to probable changes in existing conditions. In addition to

BEGINNING OF A WEATHER BUREAU SOUNDING BALLOON ASCENSION

These balloons carry self-recording instruments to great heights, the record being about 20 miles. Records of pressure, temperature, moisture and wind at various heights are obtained.

these short range forecasts the usual forecasts for twelve to twenty-four hours are available and these are useful in a general way in planning the next day's program Forecasters do not pretend to say whether or not a flight should be made. They endeavor simply to point out what, in their judgment, the weather will be, leaving to the pilots or those in charge of flying operations the decision as to whether or not the flight should be undertaken.

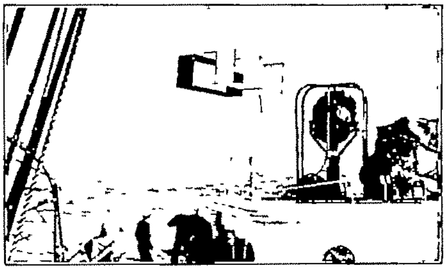


Captive Balloon Ascension on Mount Whitney, Calif.

The Future

Those of us who believe in aeronautics, and the number is happily growing by leaps and bounds, foresee a development in the not distant future when it will occupy a prominent place in the commercial life of the nation, not supplanting, but supplementing in a large way other types of transportation. This development means a similar expansion and intensification of meteorological service. With twenty-four-hour flying it will be necessary to have a meteorologist on duty throughout the day and night at all important airports, and to arrange also for special reports from intermediate points. A prompt and effective system of communications will be developed whereby not only will weather reports and forecasts be exchanged between airports as at present, but in addition, when conditions justify such action, warnings will be radioed to aircraft in flight or sent to

Fog Approaching Mountain Top from Valley Below



Kite Flying at Sea

intermediate landing fields where signals will advise pilots to land or turn back, if necessary. Upon an adequate system of communications depends in large part the success of meteorological service; in fact, communications may be called the "backbone" of the service. With such a system and with weather reports and forecasts for all flights, day and night, the hazards of flight which unfortunately, and in considerable measure unjustifiably, loom large in the public consciousness will vanish, and aeronautics will "come into its own." It is along these lines—providing detailed and intensive meteorological service—that the Weather Bureau and the Aeronautics Branch of the Department of Commerce are now working.

Air Regulations

By William P. MacCracken, Jr.
Assistant Secretary of Commerce for Aeronautics

THE Air Regulations of the Department of Commerce, authorized by the Air Commerce Act of 1926, were put into effect on December 31, 1926, and cover five of the six main divisions into which civil aeronautic activities may be grouped. The sixth subject will be covered by regulations within a short time.

Regulations of the Air Commerce Act

These six divisions are as follows:

1. Licensing of aircraft.
2. Licensing of airmen.
3. Marking of aircraft—licensed and unlicensed.
4. Requirements in the operation of aircraft.
5. Air traffic rules.
6. Rating of air navigation facilities.

Certain classes of aircraft must be licensed, specifically those engaged in:

A. Carrying persons or property for hire or reward, or the United States mails—

1. Between two or more states, or to or from foreign countries; as from Chicago to Dallas, Texas, or from New York or Portland, Maine to Montreal, Canada.

2. Between two points in one state if a part of the flight is over another state, as from Buffalo to New York, via Susquehanna, Penna.; or from Buffalo, thence over any part of Pennsylvania, and hence back to Buffalo.

3. Between two points in one state if it is a part of a through carriage between points in different states, or countries, as from Los Angeles to San Francisco, Calif., as a part of the carriage between Los Angeles and Seattle, Wash., or from San Antonio, Texas, to Laredo, Texas, as a part of the carriage between San Antonio and Monterey, Mexico.

4. Within the air space over the District of Columbia or any territory or possession of the United States.

B. Flying between points in different states, the District of Columbia, or territories or possessions of the United States, or to or from any foreign country, for the operation in the conduct of a business, as where the aircraft is used in a business in one state, territory, or possession of the United States, or the District of Columbia, and is flown to another state, territory, or possession for use in the business in that state, territory, or possession. Applied to concrete facts, it includes the aircraft which is used in state "A" for exhibition purposes, or the carriage there of persons or property for hire or reward, and is flown to state "B" for exhibition purposes or for the carriage there of persons or property for hire or reward.

Aircraft belonging to the United States, states, territories, and possessions, and to political subdivisions, will be licensed if request for such action is made.

Rating of aircraft is made on the basis of airworthiness, which is dependent upon these factors:

A. The structural strength of wings, ailerons, tail surfaces, fuselage including engine mount, and landing gear.

B. Cockpit, cabin and control arrangements.

C. Power plant and power plant installation.

D. Equipment and instruments.

E. Propellers.

F. Fittings.

G. Materials and workmanship.

H. Flying characteristics and qualities.

Airplanes are classified according to gross weight in pounds, as

Class 1.	Up to 2500.
Class 2.	Over 2500 to 4500.
Class 3.	Over 4500 to 7500.
Class 4.	Over 7500 to 13,500.
Class 5.	Over 13,500.

In specifying the airworthiness rerequirements, the Department of Commerce has determined such safety factors for wings, control surface and systems, fuselages, landing gear, and fittings as will eliminate danger from structural weakness in aircraft meeting these requirements.

APPROVED TYPE CERTIFICATE

To expedite licensing of airplanes, the Department has provided for the use of an approved-type certificate. This certificate will be issued to a manufacturer if the Secretary of Commerce approves his airplane design, which must be accompanied by full details of constructions, power plant, stress analysis, etc., and if the aircraft passes the prescribed flight tests.

After such a certificate has been issued, airplanes manufactured according to the approved type may be licensed, providing they pass the necessary flight tests, and are accompanied by the manufacturer's affidavit showing they have been built according to specifications in the application for the approved type certificate. This system will greatly reduce the amount of inspection required.

Airplanes already in use will be licensed if they are found to be of proper design, assembly, and workmanship, and of suitable materials and equipped according to the regulations, after passing the regular flight tests. These tests and examinations will be made by aeronautic inspectors of the Department, at such places and times as shall be specified by the Secretary of Commerce. An endeavor will be made to have these inspections take place at points most convenient for owners.

VIOLATIONS

Violations of the regulations may be penalized by revocation or suspension of the airmen's license, and imposition of civil penalties. Some of the specific causes for such action are:

A. Operation of aircraft requiring a license without the same, or in violation of the terms thereof.

B. Making false statement in application or information accompanying the application for the license, or in any report required under these regulations.

C. Equipping the airplane with a type of engine not specified in the license or approved by the Secretary of Commerce.

D. Remodeling the engine and using it to propel licensed aircraft without the aircraft having been first rerated as airworthy by the Secretary of Commerce.

E. Remodeling the airplane structure and flying the airplane without having it rerated as airworthy by the Secretary of Commerce.

F. Failing to make proper and seasonable reports.

The licensing of pilots and mechanics is fully as important as the licensing of aircraft. By the regulations, persons in command of licensed airplanes in flight must be licensed pilots, and persons repairing or adjusting licensed aircraft in flight, or in charge of ground inspection, overhauling, or repairing of licensed aircraft must be licensed mechanics. An exception to the latter stipulation is that a workman or mechanic may engage in such repair work on licensed aircraft without being licensed if he does so under the supervision of a licensed mechanic.

REQUIREMENTS FOR PILOTS

Licensed pilots are classified as private and commercial pilots. Commercial pilots are further divided into groups, as transport pilots, limited commercial pilots, and industrial pilots. Transport pilots are qualified for all operations approved by the regulations. Limited commercial pilots are restricted to the carrying of persons and property for hire within a short distance of a specified airport or field. Industrial pilots are licensed for aerial photography, cotton dusting, etc., but may not carry passengers for hire. Licensed mechanics are classed as engine mechanics and airplane mechanics. A plurality of licenses may be held by one person.

The minimum age for industrial pilots, limited commercial pilots and transport pilots is eighteen years. The minimum age for private pilots is sixteen years. Industrial, limited commercial, and transport pilots must be citizens of the United States or of a foreign country granting similar privileges for United States citizens. Private pilots may be citizens of any country.

Up to December 31, 1927, the Department will approve applications for transport, limited commercial, and industrial pilots' licenses by pilots who have filed their first naturalization papers, and who meet all other requirements.

Before being licensed, transport pilots must have had one hundred hours of solo flying, of which at least five hours must have been within sixty days prior to the filing of the application. Before being licensed, industrial and limited commercial pilots must have had fifty hours of solo flying, of which at least five hours must have been within sixty days prior to the filing of the application.

Adequate physical examinations are required for licensing of all classes of pilots, with the greatest stress laid upon the qualifications for transport pilots and commercial pilots.

Transport pilots must pass examinations on the air traffic rules, practical and theoretical tests in elementary engine and plane mechanics and rigging, and a theoretical examination in the fundamentals of meteorology and air navigation. They must pass a practical flight test including landing close to a mark, with and without engine, figure-eight turns, emergency maneuvers, stalls, side slips, etc. Limited commercial pilots must pass similar examinations.

Industrial pilots must also pass an examination on air traffic rules and must pass the practical flight test prescribed for transport pilots, except that the distance for cross-country flight shall be sixty miles.

Private pilots must maneuver at 800 feet around two pylons or buoys 1500 feet apart, making a series of five figure-eight turns, and also must make three satisfactory landings to a full stop.

Times and places for examinations for pilots' licenses will be designated by the Secretary of Commerce. The examinations will be conducted by designated aeronautic inspectors of the Department of Commerce.

Unless sooner revoked, transport and limited pilots' licenses shall remain in force for six months and industrial and private pilots' licenses for one year. Renewals may be made when the applicant's physical condition has not changed, providing he has had at least ten hours of solo flying within the last sixty days if a transport pilot, at least twenty-five hours within the last year if an industrial pilot, and at least ten hours in the last year if a private pilot. Provision is made for extensions, or securing new licenses if renewals are not possible under existing conditions.

MECHANICS' LICENSES

Mechanics' licenses are in force for two years, unless sooner suspended or revoked. Provision is made for renewals and extensions at the end of that time. Pilots' and mechanics' licenses will be suspended or revoked for:

A. Violating any provision of the Air Commerce Act of 1926 or these regulations.

B. Carelessness or inattention to duty.

C. Unsound physical condition, or any demonstration of incompetency in the operation or repair of aircraft.

D. Being under the influence, or using, or having personal possession of intoxicating liquor, cocaine, or other habit-forming drugs while on duty.

E. Refusal to exhibit license upon proper demand.

F. Violating air traffic rules.

AIRCRAFT LICENSE NUMBER REQUIRED

In order to carry out the regulations, and in particular to enforce the air traffic rules, both licensed and unlicensed aircraft are required to be identified by suitable license numbers or marks, as prescribed by the Department of Commerce. In other words, license numbers or identification marks must be shown by every civil aircraft, regardless of its use. Aircraft belonging to the United States government, and licensed airplanes engaged in racing or experimental work, will be assigned special numbers or symbols. For instance, the first airplane of the Department of Commerce was designated by the combination, *N-1*.

A licensed aircraft is identified by the license number which is assigned it. This number will be preceded by one of the following:

The Roman capital letter "C" (meaning commercial) for craft engaged in carrying persons or property for hire or reward, or United States mails, or in furtherance of a business.

The Roman capital letter "S" (meaning State) for craft used solely for governmental purposes and belonging to states, territories, possessions or municipalities.

The Roman capital letter "X" for licensed aircraft.

Unlicensed aircraft will be identified only by the number assigned it, and will in no case be preceded by a letter. Licensed airplanes in all cases bear a letter preceding the number so that distinguishing between licensed and unlicensed aircraft is a simple matter.

MARKS, SYMBOLS, DESCRIPTIONS

Identification marks for airplanes are placed on the lower surface of the lower left wing, and the upper surface of the upper right wing. The marks also are placed on both sides of the rudder By special approval of the Secretary of Commerce other designs, marks, symbols or descriptions may be placed upon aircraft if they do not modify, or in any way impair, the visibility of the regular identification mark.

REQUIREMENTS IN OPERATION

The owner of an aircraft is charged with the continuous duty of maintaining it in a proper state of repair and flying condition after it is licensed, and between its government inspections for airworthiness. Violation of this duty will result in revocation of the aircraft license.

A general inspection of the control system, landing gear, main external bracing, control surfaces, power plant, and propellers must be made at least once within each twenty-four hours preceding flight, and the results entered in a log under signature. After each one hundred hours of flight a periodic inspection must be made covering engine installation, control system throughout, propeller alignment, and fuselage, including fittings, tail skid, and tail shock absorbers. Department of Commerce inspectors must be permitted to inspect the aircraft at any time and place.

A licensed pilot must not carry passengers for hire or reward in an airplane or seaplane unless he has piloted an airplane or seaplane of that class for at least two hours within the last preceding ninety days, except when he makes practice flights in the airplane of such class for at least one-half hour, and takes it off and lands it at least ten times. Three of these landings must be to a full stop.

A transport or limited commercial pilot must not carry passengers for hire or reward at night unless he has had at least one hour of night solo flying within the last preceding thirty days, unless he makes a night practice flight of at least one-half hour with ten landings, three of which are to a full stop. Aircraft making such night flights must be equipped with approved landing and navigation lights, and also an approved signalling device.

Airplanes making cross-country flights of one hundred miles or more and aircraft operating over bodies of water beyond the sight of land must be equipped with a compass. In the latter instance, the airplane must be provided with food, water, lights, signal device, and life preservers or other approved flotation devices.

A seriously damaged licensed airplane must not be flown with passengers for hire or reward until fully repaired and its flying condition approved by an aeronautic inspector. Accidents to licensed aircraft and serious injury or death must be reported immediately to the Department of Commerce.

A complete navigation and engine log book must be kept for each aircraft. A navigation summary report made out in duplicate must be sent to the Department of Commerce every three months. This must cover the number of miles flown, the duration of use of each engine, engine installation and repairs, and the plane structure and rigging changes and repairs.

AIR TRAFFIC RULES

The air traffic rules detailed in the Air Regulations of the Department of Commerce must be obeyed by every aircraft flown over the United States, regardless of its class or the personnel operating it.

These traffic rules cover the following subjects:

1. Use of civil airways.
2. Giving way order and duties.
3. Crossing.
4. Approaching.
5. Overtaking.
6. Height over congested and other areas, and assemblies.
7. Acrobatic flying.
8. Dropping objects.
9. Operation of seaplanes on water.
10. Landing rules.
11. Lights.
12. Day marks.
13. Signals.

AIR NAVIGATION FACILITIES

The Department of Commerce has adopted a tentative program for rating airports and landing fields, which will be submitted by bulletin to all those interested in this matter. A period of time will be allowed for criticisms and suggestions, after which regulations will be promulgated covering the entire subject. This rating will include facilities and night lighting equipment, in addition to size of the field and condition of the ground.

The rating will consist of three letters, the first to cover the general equipment, the second to indicate the night flying facilities, and the third to designate the size of the field and its safety for operators.

The highest rating will be "AAA." An airport, thus designated, will have all necessary equipment for operation by day and night, transportation and communication to the nearest city or town, quarters and meals on the field for visiting airmen, and will offer safe landing for at least 2500 feet in any direction, with clear approaches, or will have at least eight-way landing for 2500 feet, the landing strips or runways not to cross or converge at angles of less than forty-five degrees.

Coöperation between the public, aircraft operators, and the personnel charged with the administration and enforcement of these regulations will do much toward advancing the application of aircraft to commerce, industry, and recreation, all of which are of vital importance to national prosperity and security.

Two Sciences—Medical and Aeronautical

By Arthur La Roe, M.D.

Captain (Flight Surgeon), Medical Officers' Reserve Corps, United States Army

UNDOUBTEDLY to many, it will require a stretch of the imagination to consider the two sciences of medicine and aeronautics as having anything to do, the one with the other There are, of course, certain indirect associations, as when the airplane evacuates the most seriously wounded from the zone of advance to a base hospital, far out of reach of even the longest range guns; or medical supplies are dispatched by air to detached commands; or, in civil life, the doctor is flown to his patient in some out-of-the-way place. Here, however, the one is merely making use of the other, just as big businesses do.

Relationship between These Sciences

But is there any direct relationship between medicine and the science of aeronautics? Has medicine anything of material aid to add to the advancement of aviation? A proper reply to these questions should prove highly interesting to those engaged in both activities, and to those laymen who have an interest in either the one or the other. Quite obviously medicine can add nothing to flying from the engineering aspect. What it has to offer has to do with the actual operation or practice of flying. It deals with the element of safety in the air.

In general the factor upon which the universal adoption of aviation by the public most largely depends is the factor of safety. Quite certainly if aviation were assuredly perfect from the standpoint of safety, it would be quickly accepted by the traveling public. The public entertains a certain skepticism regarding the extent to which this factor has been developed. This is evident from the nature of the reply so commonly made to an invitation to fly. "No, thank you, old chap, I'm sorry, but I have a really important engagement tomorrow," is a fairly typical one. The thought of aviation seems to bring to the lay mind an idea of sudden and violent death. Strangely enough, our human psychology being what it is, patronage is never denied the motor car because of its lack of this factor. And this in spite of its thirty to forty odd thousand fatalities annually in this country alone. One of my good friends, who resolutely repels every attempt at an approach on the subject of the air, is a reckless demon with his motor car. I feel that I take my life in my teeth when I ride with him. He really should fly. He would be much safer in the air, as would be also those poor mortals on the ground who are at his mercy when he drives.

Flying Is Safe

The public estimate of the relative safety and danger in flying is, as sometimes occurs, grossly in error. The factor of safety has already long since been brought up to a parity with the corresponding factor in other methods of transport, such as the motor car, the rails, and the vessels afloat. Undeniably aviation did pass through an exceedingly dangerous period during its developmental stage, as did also the motor car and the railroad train. The pioneers took terrible chances, and the toll in human life has been great indeed. The sacrifice has not been wholly in vain, however. Flying today is about as safe as most of the other activities we engage in. This progress has resulted, first, from a consistent and steady development of the science of aeronautical engineering; and then from the application of the science of medicine to the practice of flying, in a study of the physical condition of the pilot and its relation to the safety of flying.

ANALYZING CASUALTIES

This matter of accidents in the air has received altogether too little of our attention. The public gives it none at all, except to read the harrowing details of the daily calamities that befall those foolish enough to risk their necks. Even within the industry itself, not enough care has been given to a proper analysis of these occurrences, and a searching for the causes with a view to their removal. The Royal Air Force (British), just before the close of the Great War, began a very interesting study to determine if possible what means might be employed to reduce the alarming number of casualties in its service. Something like four thousand cases were taken in which an analysis was possible. Naturally enough, a certain number are not amenable to analysis, as where there were no competent eye-witnesses, or all occupants of the ship were killed. These astounding results were announced. Two per cent were due to enemy gun fire; eight per cent were due to structural failure in the apparatus, either motor or plane; and ninety per cent were due to failure on the part of the pilot, either physical or mental. It is very interesting to note, too, that of these ninety per cent due to the pilot, seventy-five per cent were due to mental, or psychologic, and twenty-five per cent to physical disability or handicap.

In commercial use of the airplane we need not concern ourselves with the enemy's bullets and archie shells. The two per cent are thus eliminated. The eight per cent have been materially reduced by the progress in engineering. At the time when those statistics were made up it was a fairly common occurrence for a wing to fall off, a wooden propeller to fly apart, or a control mechanism to become jammed. Ships of the present day have been improved structurally to the point where these mishaps do not occur at all. In ships of current construction, failure in the air is utterly unknown. So much for the two per cent and the eight per cent. But what about the ninety per cent, those due to a failure either physically or psychologically on the part of the pilot? The science of engineering can do nothing about these, no more than it could build a Panama Canal until after medical science had eradicated the mosquito-born yellow fever. This is where medicine steps in to add more than a "bit" to the safety of this newest and most efficient method of fast transport.

How fascinating it would be in the light of the more recent medical knowledge in its relation to flying, to analyze some of the very early fatalities in flying, those of the period that preceded the rapid advances made in the art during the war. It has always been customary to ascribe all aerial accidents, the exact cause of which is unknown, to some failure in the machine. The press report runs something like this: "It is difficult to account for the accident, for Pilot So-and-So was an unusually skillful airman. It is quite certain that something went wrong with his machine." Now, according to these British figures, if by "his machine" is meant the human machine, then the reports are correct in about ninety per cent of the cases. Unquestionably, many of our early flying men went to their deaths the result of some physical or mental handicap, which could have been discovered had flight surgeons existed at the time

CLASSIFYING CASUALTIES

In all fairness to aviation, and in order to have a proper understanding of the actual circumstances, we should do more than merely analyze the casualties. We should classify them as well. It is not just to stigmatize all aviation because its most dangerous form is constantly at odds with the fates. One wouldn't discredit the motor car in general because of the recent accident in Wales, in which a racing man was killed while driving at 165 miles per hour in an experimental car of very high power. And yet we see in the news reports that a certain disaster has occurred in aviation, and jump to the conclusion that all flying is unsafe, without so much as considering that that particular mishap was in an experimental model that was hardly expected to qualify. We read constantly of the many fatalities in our military air services, and forget that these services are of necessity dangerous in their nature. It doesn't follow at all that because some young military fliers meet with disaster while they practise loops and turns in close military formation, or in mimic combat, that I will be unsafe as I fly from city to city in a passenger transport plane. And a great many of the accidents reported in these years just gone by are the direct result of flying in equipment not airworthy, but flying because there were no laws to prevent them from flying. Fortunately now in the new Air Commerce Act we have a means of guarding against the use of unairworthy equipment.

In this connection we should consider as an entirely separate group those accidents that occur directly as a result of meteorological conditions; cases where both pilot and ship were known to have been in perfect condition, but where the elements presented an insurmountable obstacle. The untimely death of Charles Ames of the Eastern Division, New York-Chicago Night Air Mail pilot, would probably be properly classified in this group. Ames was the victim of an impenetrable fog, a rapidly diminishing fuel supply, and a heroic determination not to sacrifice his ship by use of the parachute, along with a grim adherence to the tradition of his service to advance the mails. Similarly Lieutenant "Cy" Bettis of the army gave up his life in like circumstances. He failed by only a few feet to clear the top of a mountain hidden in a dense fog. His physical condition was excellent, and his ship one of the army's latest pursuit types.

AVIATION MEDICINE

In order to improve still further this element of safety in flying, to study these ninety some per cent of accidents that are due to the pilot's condition, a new branch of medicine has been developed during and since the Great War. A specialty within the science, now known as aviation medicine. The Army maintains a school for training physicians in this specialty on one of its largest training fields; the Navy has one in one of its base hospitals. The graduates are called flight surgeons. Their duties are first to select the cadets for training from among the applicants; then to care for them during the training and flying period; to "ground" them temporarily or permanently when a condition develops making further flying a hazard; and to restore them to flying status as quickly as possible when temporarily grounded.

It is not within the scope of this paper to detail the course of study in aviation medicine. There is available a sizable text book on the subject. It will probably be of interest, however, to point out a few examples to show wherein the science of medicine has contributed to the safety of flying, and to show along what lines the flight surgeon works. It has been said that anyone who can drive a motor car can fly an airplane. To a certain extent this is true, but it is a dangerous generalization. All flying is not alike by any means. It is one matter simply to get a ship off the ground, sport around a little while, and bring it back. For sporting purposes and private use these ships are the acme of simplicity. Flying them is much simpler than is driving a car. No clutch, no gears, no brakes, possibly no instruments. And by far the keenest sport yet devised. If ever mere man is truly the lord of all he surveys, it is when he sits there with that joy stick in his hand. In the civilian course of flying that I took, that of the Curtiss Flying Services at Garden City, L. I., there have been several hundred civilians trained to fly since I first began visiting the field, and so far without a single failure to my knowledge. And in more than five hundred student fliers trained in seven years there has not yet been a single accident, even of a minor nature. This is one matter, however, simply to fly for a bit of sport now and then.

It is quite a different matter to take a combat ship out over the enemy lines, to fly above 20,000 feet, at speeds over 250 miles per hour, to watch more than a dozen instruments, to be upside down as much as right side up, to avoid collision with your comrades' planes, and to operate two machine guns against the dozen or the hundred enemy ships that are exhibiting the same consideration toward yourself. And it is still a different matter to take out the night mail every night at exactly 9.35 o'clock, quite regardless of the weather, and to fly through rain, and snow, and sleet, or fog. And possibly bear the responsibility for the lives of a dozen passengers as well.

Those who argue that all may fly, in order to demonstrate a certain universality in flying, fail to note that flying deals in three dimensions, whereas man is natively equipped to operate in but two. They fail again, and here grossly, to appreciate that all men, though they may be born free and even equal, are not born equally equipped with the various qualifications that enter into the various pursuits of man. And those pursuits that are the most recently developed find the least number of men equipped for them. Flying is probably the latest of man's acquisitions. Barring the fair-weather flying of sport, and considering only commercial and military flying as a business, it is far from true that any may fly. The fact is that very few may fly. In this sense flying requires a great number of qualities and traits, not any one of which is rare in the race, but all of which are found in only a few. Even in such a group as the cadets at West Point, or the midshipmen at Annapolis, far less than half can qualify for military flying. In the general public probably less than ten per cent could pass muster. Truly he must be a super-man who takes the responsibility of flying large groups of passengers through the dark and the storm, or of defending his country's honor in her first line of defense.

THE FLIGHT SURGEON AT WORK

The flight surgeon studies his man in every particular that may have a bearing on flying. He demands good vision, not merely in the ordinary sense, that he must read small print at a certain distance. Many tests are applied to show, not what vision the man has, so much as what he may have under untoward conditions. For instance, there must be no possibility that the eyes, once in the air, will lose their balance, and fail to give the stereoscopic effect with which the pilot must judge his distance from the ground in making a landing. In the ears, he must possess not only good hearing, but perfect function in that delicate apparatus in the internal ear with which we determine our equilibrium. Three tiny little semicircular canals deep within each ear, lined with a delicate membrane, and filled with a fluid. The whole structure no larger than a hazelnut, yet how important to the passengers on an air liner those six little canals deep within the head of the pilot. And an ordinary cold in the head may markedly influence the function of these little organs. More than a few men have gone to their deaths because of some simple affair like this, that some flight surgeon might have warned them of if he had been available. And the time is coming when a flight surgeon will be required to "clear" every pilot carrying passengers on every flight. The flight surgeon is interested not so much in what is the blood pressure on the ground, as in what it is likely to be under altitude conditions. In the heart action, not so much as to its quality under examination, as what will be that quality under stress or the influence of severe emotional strain, as in fright, when the pilot suddenly discovers another ship dangerously close to his own in a fog. To faint under those circumstances would not be quite the proper thing for a pilot to do.

From the earliest period of man's evolution he has been called upon for a constantly increasing speed of nerve reaction. In this day of flying he is called upon for a reaction faster than has ever before been demanded. The flight surgeon splits a second into tenths, yes hundredths, in measuring the nerve-reaction-time of his subject. And only the very fastest are qualified. Suppose that two ships approach each other on a given line of flight, each traveling at 120 miles per hour, and in visibility of only a half mile. This gives seven and a half seconds for the pilot to see the danger, decide on his course of action, and carry it out. But visibility is not always of a half mile, speeds are not always so slow as two miles per minute, and then it takes an appreciable time for some ships to respond after the pilot has actuated the controls, and there is some slip or skid in the air as a medium. All of this reduces to considerably less than a single second the time that the pilot has in which to make the proper decision and act upon it. And yet many people have reaction times as slow as several seconds. Who would want to fly with one such?

Another interest of the flight surgeon, and one of paramount importance as shown by the British figures and our own experience, is the mental state of his prospective pilot; what psychologists call his personality makeup. How, in other words, his nerve system is put together. Solidly, so as to be unruffled even in greatly distracting circumstances, or slovenly, so as to go to shreds on the slightest provocation. The flight surgeon makes a psychoanalysis of his man, to determine, with what art he may, his adaptability to the varied stresses of flying. For, whatever of sport there may be in the fair-weather type of flying, there are in the business of flying stresses that the human economy, psychologically speaking, is not naturally trained to withstand. Many of us live perilously close to the edge of mental breakdown, like the so-called shell shock cases of the war, many of whom never heard a shell explode. These were near the edge, and the stress of warfare pushed them over. The fact is, it is to be seriously doubted if any of us are very far from the edge, since we develop only as necessity requires. Flying with its demand for fast reactions, accurate judgments, its great penalties for failures, its terrific speed, its use of the additional dimension, its very intenseness—flying stresses anyone up to very near his limit, and only a super-man, psychologically speaking, can withstand the stresses of the most strenuous flying, such as the night mail, or military combat.

MEDICINE MAKES POSSIBLE THE CONQUERING OF THE AIR

In general there are two types of unfit, the one who under stress just quits and becomes sullen, morose, or even suicidal; the other who becomes excited and panicky and wants to break into pieces everything within his view. Obviously neither would make a good risk as a flier. I know of one case where a man quit his ship and took to his parachute merely because the engine wasn't functioning properly, in a place where there were plenty of available landing fields. He could have saved his ship. Another, where a man went mad with rage over a similar difficulty and dashed the ship into the ground, killing himself and another, and sparing but one of the occupants of the ship. And still another, where a man immediately after being advised that he was the victim of a dreaded disease, took off and dove straight into the ground with engine full out—plainly a case of suicide. All of these are cases where the dangers of aviation have been enlarged upon in the reports, and "something went wrong with the machine." The flight surgeon attempts to select his men with as nearly an even mental balance as possible. This is of necessity the least scientific and the most artful of his endeavors, and yet it is productive of highly valuable results when carried out with the proper authority.

Thus is the science of medicine, apparently entirely foreign to the science of aviation, lending its hand to the proper and safe development of this means of transport. Medicine made possible the building of the Panama Canal, and history is but repeating itself, as medicine makes possible the conquering of the highways of the air.

Aviation Insurance

By Charles H. Holland
President, the Independence Companies, Philadelphia

THE romantic history of transportation and the scarcely less interesting record of the development of insurance are curiously interwoven. For whenever man sought new means of covering distance he was faced by a multitude of hazards to himself and his property, calling for new ways of protecting his finances.

History of Transportation Insurance

The storm at sea, the hidden reef, and the other perils which beset the sailor were among the earliest of these transportation hazards, and probably the first known forms of insurance were the "bottomry bonds" placed on the small and primitive vessels which ventured into the Mediterranean.

Man progressed. He developed the steam engine to propel him over metal rails, and there arose the hazards of fog-hidden signals, and broken and washed-out tracks. Again the insurance system expanded to compensate man for personal injuries received in railroad wrecks and to safeguard his pocket-book when his goods were damaged or destroyed.

The automobile came and brought its own peculiar hazards. Automobile insurance thereupon was evolved in all its forms of protection against fire, theft, collision, property damage and liability. Insurance still kept abreast of man's endeavor to conquer space and time.

Latest of all, a new era in transportation began, when, one day in 1903, a crude, ungainly machine bumped along the top of a North Carolina hill, rose uncertainly in the air, soared for a few moments and then came back to earth. Man had begun to fly, but in the process soon discovered hazards heretofore undreamed of. As the airplane developed in utility and use, the need for protection against these hazards increased. This led to one of the most romantic chapters in the eventful history of insurance.

Until the time of the World War, the unfamiliar spectacle of an airplane in the sky caused excitement with all who saw it, but with the return of peace the new vehicle became the servant of commerce. Soon it was carrying mail across continents, and was beginning to be used for fast express package service as well as for passenger transport and special duties.

Even before the war underwriters began to consider the possibility of developing coverage for the risks of flying, a veritable insurance adventure hardly inferior to that of aviation itself. The first policy was written in England, in 1912, by Horatio Barber. However, the war put a check to thoughts along this line, and its close found the United States with hundreds of war planes, now idle, and many aviators who were anxious to find employment in flying. Thus there began an effort to develop commercial flying, and in 1919 there arose a sudden activity in aviation insurance on the part of eight or nine companies.

The main drawback was the timidity of the companies to grant aviation insurance. The result was that no one company accepted more than a very few of the lines of insurance required by those engaged in aviation. At the same time, the limits of indemnity were, in many cases, insufficient to meet the requirements. The aircraft owner, therefore, in order to secure anything in the nature of comprehensive coverage had to obtain various policies from different quarters—some of these were foreign policies and there were gaps between the different coverages. The limits of indemnity were too low and in many cases the rates of premium very burdensome. This situation brought about conditions that bristled with difficulties for companies, agents and brokers, and aircraft owners.

Another drawback was the inexperience of most of the insurers. This led to the acceptance of many excessively hazardous risks from which large losses arose. It brought about higher rates of premium than would have been the case if more careful selection of risks had been employed.

ALL-IN-ONE AVIATION COVERAGE

It soon became apparent that conditions had not yet reached the stage of a sound underwriting proposition; the experiment proved costly to the insurance companies and was virtually discontinued. Meanwhile, the art of flying grew under the irresistible pressure of civilization's demand, although sadly hampered by the lack of coverage, and in the summer of 1926, an announcement of complete aviation coverage in one contract was made. This means that the hazards of fire, lightning transportation, accidental damage, theft, robbery and pilferage, public liability, passenger liability, property damage, tornado, cyclone and windstorm, are all covered in a single policy, which, if desired, may be accompanied by other policies dealing with personal accidents, cargo risks and compensation and employer's liability.

RATES

In undertaking to meet the insurance requirements of the aircraft industry, it was recognized that, for the present, rates must be largely a matter of judgment, there being little available experience upon which to base them. The underwriter must apply the skill and experience obtained by him from other classes of business, but so many new factors enter into the computation of equitable rates for insuring aircraft that no definite figure can be named to cover all risks, or even to cover any particular type of risk. This means, in other words, that each risk must be rated upon its individual merits. Therefore, in every transaction the age and type of plane and engine (with particular reference to the number of engines and the factor of safety with one or more not working), the fitness and experience of the pilot, the topography of the country, the purpose and length of the flight, the time flown, whether over established air routes having adequate landing fields sufficiently near together, and the question of night flying, all influence the judgment of the underwriter in arriving at a charge for the coverage.

Depreciation is a very important point by no means to be disregarded. Aircraft demands the best of care, together with frequent minor replacements as occasion requires. It is necessary that special attention be given to the motor, which needs to be taken down and overhauled after every 75 to 125 hours flight. If we can be guided by the prices set for used motors, the value of the engine should be written off after 150 or 200 hours of flight, unless it has been taken down and overhauled at such regular intervals. In the latter event, the average life may be increased to 500 hours, or more.

The extreme complication of such considerations as they affect the risk, and therefore the premium rates which should be charged, may easily be imagined. They make it quite evident why companies heretofore have been wary about taking chances in so unfamiliar a field. On the other hand, a certain element of public service is involved. The rapid development of aviation has an immense bearing upon the welfare of the country, and the insurance companies would fail unless they found means to raise from the aircraft industry the handicap of lack of protection.

Some coverage, it is true, has been written by foreign insurers, whose experience with this class of risks has been more extended than that of American companies; but clearly the business should make a strong growth on American soil, as has been the case with every other kind of insurance. Most of our states in their compensation laws require that the employees of aircraft companies, including the pilots, be protected by compensation insurance, and naturally a company undertaking this line would desire that there should go with it such other lines as it may write. Necessarily, a premium income for this class of business must be limited because of the infancy of aviation, and the principle of averages upon which all insurance is based cannot become effective unless the business be confined to comparatively few insurers.

If the business were to be distributed among a large number of companies, as is the case with other lines of insurance, a single loss sustained by any one company would disturb its average, and it is easy to conceive that the experience of most companies would be unfavorable, so that they would withdraw from the field and leave it without protection.

On the other hand, if the business is confined to a single company or to a small group, having as large a spread as the nature of the business will permit, an opportunity may be afforded for profit which would be reflected in the rates charged to the policyholders. Rates necessarily reflect experience, and companies should not write "freak" risks, because it would be an injustice to the aviation industry if companies whose planes are engaged in normal use were charged with losses that might occur under abnormal conditions. In other words, companies should endeavor to underwrite the business as conservatively as its nature permits, with a view to keeping down its cost and extending the range of its protection.

TYPES OF LOSSES COVERED

Paralleling, somewhat, automobile insurance, the modern aviation policy covers three types of loss. First, loss to the plane itself; second, injury or damage to persons or property in the plane; and third, injury or damage to persons or property outside of the plane.

In the first group the hazards covered are those of fire, theft, windstorm and accidental damage. The inherent fire hazards in a plane are very similar to those found in an automobile, the main difference being that when a plane catches fire it is seldom within a short distance of a fire house, as an automobile may be. Few planes are stolen, although the papers last summer carried the story of two which were taken from their "parking place" in an open field. However, as knowledge of airplane operation becomes more widespread, and the market for used planes and parts increases, the theft coverage will doubtless become an important one.

Windstorm coverage applies to damage suffered by the plane when the hangar in which it is housed is struck by the wind in such a way as to harm the plane. If the plane is aloft and the wind damages some part of it so that it makes a forced landing and is injured, it is covered by the accidental damage clause, which protects the owner against loss from a wide variety of contingencies.

In the second group of hazards, those which threaten injury or damage to people or property in the plane, we find such specific coverages as passenger liability and, in additional policies, cargo risks, personal accident and compensation, and employer's liability. The passenger liability coverage is an important one, as an injured passenger might bring suit against the company operating the plane in a ruinously large amount.

The coverage of cargo risks protects the plane owner or the shipper against loss or damage to any goods being transported, or the common carrier against his legal liability therefor. Personal accident coverage may be taken out by the pilot and passengers to cover them in case of injuries. This is particularly important inasmuch as there are few life and accident policies which will cover an aviator. Compensation and employer's liability insurance should be taken out by companies operating airplane fleets to protect themselves when pilots or ground men in their employ are injured in the course of their duties. In most states, employers are compelled by law to carry compensation coverage, but whether required to do so or not few employers care to assume the burden of paying compensation claims out of their own pockets, and the coverage is therefore a popular one in large outfits.

The third type of coverages, those which insure against injury or damage to persons or property outside of the plane, includes two clauses, public liability and property damage.

There is almost no limit to the amount in which one can be sued for injury to a person. Anyone who has watched the trend of verdicts in liability suits against motorists must realize that juries are inclined to render verdicts stipulating immense damages. The public liability coverage is, therefore, one of imperative necessity.

When a plane runs amuck, any property it strikes in the process is going to be rather severely damaged, and insurance to pay for that damage and any suits arising therefrom is an important adjunct to complete insurance protection for airplanes.

Foreign companies—mainly Lloyd's organizations—have insured aircraft under policy forms and conditions which may be well understood abroad, and interpreted by foreign courts, but which are not in line with American methods. The companies now writing aviation insurance have prepared policy contracts predicated upon the well-established conditions of the fire insurance contract prescribed by the various states, and the standard automobile policy, so that most of the policy provisions already have been interpreted by the courts and little room is left for misunderstanding as to what the coverage actually is. The form, however, is elastic, and may be broadened by endorsements as occasion requires.

The aviation business of the companies writing this class of coverage is handled principally through special departments. Some of their underwriters are experienced aviation engineers who are well qualified to offer advice to policyholders having in view increased safety. The companies have built up an inspection and adjustment organizations in keeping with the requirements of their policyholders, and have developed a very comprehensive classification system, whereby all aircraft business is classified according to the coverage written, subdivided under type of use and plane. The losses also are classified according to the cause, but with a subdivision as to the experience of the pilot.

CAUSES OF LOSS

Aircraft accidents are seldom ever due to a single cause: usually several factors are involved, among which may be mentioned structural defects, engine trouble, lack of fuel, weather conditions, error in judgment, physical illness, fatigue and mental confusion. If only one of these factors influenced the situation the aircraft could usually be brought to a safe landing, but if, in the case of engine trouble, the pilot becomes confused and does something he should not do, or if his judgment is poor in an emergency, the result may be serious.

The experiences of the German Aviation Pool show the majority of the serious losses to be the result of engine failure, and starting and landing accidents, which together accounted for 77.5 per cent of the total number of accidents in 1923, 85.7 per cent in 1924, and 68 per cent in 1925. From this same source we note that of 106 aircraft insured in 1925, losses were sustained on 58. The Directory of Civil Aviation in England estimated that within the past year landing accidents in that country amounted to about 25 per cent, engine failure about 25 per cent, and weather conditions about 50 per cent.

The foregoing statistics show the importance of having the very best type of pilot obtainable—one who is physically, morally, and mentally fit and in every way competent.

The working safety of aircraft engines has not yet been satisfactorily solved, from an insurance standpoint. The ground organizations of the civil aviation companies still leave much to be desired. Salvage surveys and repairs in cases of damage still involve disproportionately high costs and difficulties. The enormous demand upon the nerves of the pilot is a very important factor in underwriting. Adverse weather conditions is a serious enemy of aviation. Starting and landing maneuvers (especially in case of forced landing) are not yet executed with the desired precision. Many difficulties remain to be overcome, such as adequate ground forces, repair and salvage forces, etc. The cost of repairs is very high, and almost impossible at any price in isolated portions of the country. Insurance can make a more rapid advance only when the facilities of landing fields and repair shops are scattered at more frequent intervals along the main air routes.

The "Air Commerce Regulations" recently adopted by the Department of Commerce (Aeronautics Branch), having to do with the licensing of aircraft, identification marks, requirements in operation, licensing of pilots and mechanics, and air traffic rules, will have much to do in improving underwriting conditions. The necessity of a register of aircraft similar to Lloyds' Register of Shipping is recognized.

Errors in judgment are perhaps the most common cause of aircraft accidents. The pilot may misjudge his distance from the ground when landing, and flatten out too soon or too late; he may bank too much or too little; he may attempt to turn too near the ground and side-slip. A good pilot must subconsciously react quickly to counteract a sudden emergency in which he is placed. A fraction of a second may determine safety or a crash. Fatigue is a common cause for failure of the brain to respond promptly to an emergency. Fear does not occupy the important position sometimes accorded it, as a pilot has little time to think of danger during flight.

Naturally, as a result of the progress in perfecting aircraft construction, accidents are not caused as frequently today through the failure of some vital part of the plane as formerly. Careful inspection of the entire aircraft, however, is still most essential before attempting to take a machine off the ground. An aircraft is subject during flight to such severe strains and vibration that defects are sure to develop after any extended flight.

It is not uncommon for a plane to catch fire in the air. The chief causes are a defective gasoline feed system; the accumulation of inflammable vapors; gasoline, dirt or oil about the engine or manifold, which may become ignited through overheating or a spark. The danger from fire is most serious when a crash occurs resulting in the bursting or puncturing of gasoline tanks or supply pipes.

EFFECT OF PROTECTION ON FLYING

I have traced the history of insurance and transportation and examined, briefly, the various forms of aviation coverage; the next question is, naturally, what effect, if any, will this insurance protection have upon the development of flying.

The few months which have passed since the announcement of complete aviation coverage have not sufficed to show any marked change in the status of the airplane, but certain predictions may be made, which, because of past experience and present indications, are practically certain of fulfillment.

Large express companies, which had heretofore hesitated to utilize the airplane for the delivery of rush goods, are now planning to buy large fleets of planes and send them all over the country, safe in the assurance that each one is fully underwritten. The government will doubtless find more and more private interests willing to lease and operate air mail routes. A case in point is the Boehing Airplane Company, which is to operate an air mail route in the West.

It is not surprising that insurance should have a strong bolstering effect on aviation. There is scarcely a business today which would not collapse if the supporting framework of insurance were withdrawn from it. Insurance to the individual means protection against monetary loss; to an industry it means a firm credit basis, an assurance of immunity from the ravages which chance mishap can impose.

Recently, the editor of one of America's greatest aviation trade journals made the following statement:

> With the announcement of an insurance policy that would cover every risk in aeronautics the foundation of successful commercial aviation in America was laid. One of the causes retarding its growth has been the failure to secure insurance at a cost that would warrant complete coverage and without insurance it was impossible to establish the confidence necessary to encourage investment.
>
> In the transaction of business, credit is essential. It is mutual confidence organized. There are two pre-eminent attributes which inspire financial confidence in men and organizatioms—"what they are" and "what they have"—otherwise known as "character" and "collateral." These are the high C's of business—without them, credit cannot exist.
>
> Insurance will establish confidence in aviation and insure a liberal amount of available loan for development. Heretofore, well-organized air plans failed in the majority of cases due to their inability to secure proper financing.

That the leading airplane manufacturers of America are thinking along the same line may be seen from reading the following excerpt from an article written by Thomas H. Huff, President of the Huff Daland Airplane, Inc.:

> Above everything else the airplane at the present moment needs public confidence. Directly through the application of insurance to aeronautics will come public recognition of the safety of air travel. There will be an increasing demand on the part of business executives to use aircraft when they know that it is possible to insure the plane against loss or damage. Such insurance will have a far-reaching effect on the application of airplanes to commerce. Companies operating airplanes over large territories will have the assurance that their capital investment is protected.

A few years ago, the day when private planes would be owned by individuals was regarded as a purely visionary period; now, that day seems almost upon us. Naturally, individual ownership of planes will mean that each plane owner will require full protection against fire, theft, crash, and other contingencies.

WHAT PRACTICAL AIRMEN THINK OF IT

One could scarcely close a discussion of aviation insurance without making mention of the attitude of the practical airman towards it. Lieutenant George O. Noville, Flight Engineer of the Byrd North Pole Expedition, Supply Engineer of the Around-the-World Flyers, and recently selected to accompany Lieutenant Byrd on his proposed New York-to-Paris flight next summer, made this statement recently: "I have felt for a considerable time the necessity of adequate insurance as a means of permanently establishing commercial aviation in the United States."

That sentence indicates that aviation insurance is as enthusiastically regarded from the cockpit as it is from the swivel-chair.

Standing at the threshold of an age of limitless possibilities, there is the temptation to let one's imagination play with the coming rush of airplanes, which seems destined to transform our social and economic conditions. Scarcely less fascinating is the desire to foresee something of the vast possibilities of aviation insurance, and to feel that one may have had an opportunity to contribute in some degree to its pioneering. Insurance companies are "taking off" on a glorious adventure in aviation insurance.

Aircraft Merchandising Plans of the Alexander Aircraft Company

By J. Don Alexander, President

SOME fifteen months ago we of the Alexander Industries began construction of a new light commercial airplane.

The new ship's performance was exceptional and the price quoted in Denver was less than the manufacturer's cost on the first fifty produced. Therefore, as Emerson once said, "the world should have made a beaten path to" the manufacturer's door. But careful and expectant watching showed no signs of such a movement. We soon saw that we would have to carefully survey the path, pave it, and put signposts up along its course before the public would even look in this very right direction.

How to do this? That was the question.

We of the Alexander Company, searching for precedents which would be of value in the merchandising of this plane, could find none. Competitive manufacturers never had found a sales plan necessary because their small output had been gobbled up by a hungry market before the paint was dry on it.

Their methods, however, did not interest us. One-a-month, one-a-week production did not interest us. One-a-day production had significance for us only as a stepping-stone which would carry us a little nearer to one-an-hour production, or even—well, we have all read about Ford's four cars a minute (or is it sixty?) and the hardest head may have its dreams.

We believe in the United States and we believe in aviation. Put these two beliefs together, shake well, and then guess what we expect American aviation to amount to in the future. So we studied out a way.

It seemed apparent that the most effectual way to make the American public air-minded would be to get the people who compose it into the air, and there show them that flying is safe, efficient, economical, and highly enjoyable. Having come to this conclusion we had, so to speak, surveyed the route that much-to-be-desired path to big production must follow.

Convincing the Public

The first process in the actual construction of the path was the process of proving to the public the falsity of the general impression that piloting an airplane is a superman's job. Supermen are and always will be scarce. If none but supermen could run airplanes the world's total manufacture of aircraft would not need to be much more than one a generation. The hat industry would not amount to much if hats were worn only by such human beings as have heads the size of Daniel Webster's.

That notion that all pilots must be supermen was planted in the public's mind by stories about war-time flying, which necessarily is dangerous and full of such unexpected episodes as require a vast ability to meet terribly critical emergencies. After the war was over, finding that this traditional glory automatically fell on them, commercial aviators grinned and nodded. You cannot blame any human being for accepting public adulation, reverence, respect. Is there, or has there ever been, one who would not like to be regarded as a hero? What mere creature in pants and goggles can seriously protest and say, "Nonsense, it isn't true," when a pretty girl or an admiring boy, looks at him with awe and brings against him the splendid charge that he is gloriously brave?

But such a public mental attitude, it must be admitted, is very far from one which will accept the safety of flying. Even when such supermen declared flying to be safe the general attitude naturally was that they were being modest.

SELLING ORGANIZATION

Our first task, therefore, was to form a selling organization made up of district dealers with exclusive sales rights in protected territories. This plan was similar to the ordinary competitive dealer organization but varied from it slightly.

The ordinary competitive contract requires the dealer to purchase a certain number of planes for his territory, regardless of his ability to sell them there. Our plan requires that a demonstrator Eaglerock shall be in use or ready for use at all times in the dealer's field, and we recommend that with this plane he shall offer to train students. We know that this will help him sell our planes while, at the same time, increasing general interest in aviation. In other words the question which we ask him is not, "How many ships can you sell?," but, "How many ships can we help you sell?"

After we had fixed this idea firmly in our own minds and those of our dealers, we began upon the task of selling to our dealers the idea of so lowering their instruction and passenger-carrying rates as to make them interesting to the public. Prohibitive prices have killed many a good idea and are among the influences which have handicapped American aviation. But rates can be established which will seem reasonable to the public and remain high enough to yield a dealer profit. As volume of business increases these rates can be lowered further to the dealer's increased profit.

INSTRUCTION

At our own airport we established an experimental school offering instruction at ten dollars an hour, a reduction of half to two-thirds of the established rates. This procedure caused quite a furor among the flying fraternity, some but by no means all of the comment being just a bit (or even quite a lot) resentful.

We then established a passenger-rate of one cent a pound for short joy-hops and very quickly proved, at least to our own organization, that volume of business at fair prices pays. This also had a lesson in it for our dealers: that a machine must be used steadily if it is to yield a profit.

We further argued to ourselves and them that even though the rates for student instruction and passenger carrying were net cost, they really would yield a profit if they resulted in increase of sales.

In order to put this thought over with the dealers we directed their attention to the free demonstration and instruction work done by automobile dealers, typewriter manufacturers, and others, and showed that in these tremendous and growing businesses such methods are considered essential to success.

We cheerfully admit that an aviation school or commercial operator cannot make money at the suggested rates if dependence is solely upon such business. But our methods surely have roused interest, which of itself is worthwhile, and where they have involved actual competition on our part with established schools, we have, in most instances, recommended to the applicant pupil that he take his instruction from his local school. Thus we have given to various schools business that they scarcely would have secured without us, and, in addition, have stimulated general interest in aviation, helping all schools.

As our production has increased we have steadily enlarged our advertising campaign, and today the flying fraternity is familiar with, and sold upon, our product.

PURCHASE PLANS

We learned that approximately 5000 commercial flyers, naturally anxious to fly new production jobs, were prevented by high cash prices from so doing, and, therefore, were flying inferior war-surplus ships purchaseable at one-fourth to one-quarter the price of our new ships. We studied this situation carefully.

Presently we learned that a pilot and ship engaged in commercial work should do an annual gross business of five to ten times the cost of equipment. It was obvious, therefore, that a market was ripe for sales if we could find a way whereby such pilots could buy new ships from us upon the payment plan.

It is necessary for a pilot to invest with us, at the start, only thirty per cent of the cost price of his ship, if he decides that a larger cash payment will be a handicap upon him. This enables a pilot, if he is of the right sort, to get a new ship with the same cash-payment that a war-surplus ship would cost him, and let the ship pay for itself, thereafter, out of the increased earnings which it will make over an obsolete war-surplus machine. This time payment plan is available to qualified pilots and takes good care of them.

REPRESENTATIVES

To interest the non-flying public our dealers, backed by all the help that the home office of the company can give them, appoint sub-dealers and representatives throughout their territories and this gives us accredited agents (representatives) in each city and village of the nation. Sub-dealers must be flyers and must each keep a demonstrator ready for operation. Representatives are not necessarily flyers and need not maintain demonstrator machines, but each must be equipped with a model and other sales material and report progress, from time to time, to the dealer and the Denver headquarters. Representatives are paid commission on the sale of planes, student instruction fees, and passenger flight returns, and are expected to boost commercial aviation whenever that is possible.

We have no difficulty in finding representatives. At least one young man intensely interested in aviation is in every town of the United States. A surprising number so far have been unable to attach themselves to the new art and industry. Such young men eagerly welcome the opportunity to become one of our representatives, for it offers for the future the chance of becoming a flyer, a mechanic, or a salesman.

We supply such a man the best of material to enable him to talk up aviation to his townsmen; the model airplane adds an attractive item to his equipment and enables him to make a real local display.

This display always attracts much local attention and draws many to the representative with questions which study of our instructive literature has fully equipped him to answer. To live prospects such a representative will give catalogues and copies of *The Aircrafter*, our house-organ, which we distribute monthly to air-minded friends.

For our definite purpose of helping we have our sales manual, our sales course, a ring-binder containing photographs of construction details, dealers' weekly bulletins, suggestions on merchandising, methods of follow-up on prospects, and model sales-letters.

On demand we will send flying salesmen from the home office. We will plan and help coöperation with chambers of commerce and manual training schools. We supply motion-picture playlets featuring the safety of flying. We suggest and direct student instruction. We do national advertising in aeronautical publications and other mediums. We keep in close contact with all sales publications and give our whole force the benefit of this.

ADVANTAGES SET FORTH

We have determined to bring the advantages of airplane use to the American businessman's attention and are succeeding in this effort, as is instanced by the fact that five recent sales of planes were to non-flying businessmen convinced that planes will help them in their enterprise.

We recently surprised competitors by paying for a series of advertisements of their products in an aeronautical periodical. We feel that each new ship sold, of whatever make, boosts commercial aviation and that that reacts to our advantage. The more sales our competitors may make the better we shall be pleased.

We find among the youth of this country an encouraging interest in the conquest of the air. Question your son or any boy from the age of ten to that of twenty and you will feel ashamed of your own lack of aeronautical information. Every youngster of the present day has the same desire to someday own an airplane as the youth of the last generation had to someday own an automobile.

A worth-while message to American businessmen is: The next time you get a chance take a ride in an airplane. A feeling of comfortable safety will quickly substitute that fear you will probably expect. The pleasure and the comfort of this means of travel will be revelations to you.

Clearing the Air for Commerce

By W. Jefferson Davis

Lieutenant-Colonel, Reserve Officers Corps Formerly War Department Legal Advisor in Europe[1]

THE American Congress has at last underwritten the "fourth estate" of transportation. It has written the Bill of Rights of the new commerce—the commerce of the air. The legislation was rather belated, but now that it is on the statute books, it atones, partially, for the legislative laggardness of the past, and offers to American capital virtually an uncharted field as limitless as the skies.

The Air Commerce Act of 1926

There is no popular conception as yet of the scope and potentiality of the "Air Commerce Act of 1926," known before its passage by Congress, and approval by President Coolidge, as the Bingham-Parker Bill. This act put the government to the task of encouraging and developing commercial aviation, but without the intervention of a direct government subsidy. Our government has shied rather consistently fron direct subsidies, although European nations are not so aloof.

But it must be admitted that European nations, although they did not invent the airplane, have outstripped the United States in its utilization. Their passenger, freight, and air mail lines in operation today demonstrate that fact.

That we are a pioneer, yet a novice, in this .game of aerial transportation may be illustrated in a paragraph. While Europe has been carrying on intensively in the air of commerce, our activities mainly have been confined to a few air mail routes, none of them self-sustaining. Practically no mail route is self-sustaining, whether a rural delivery or an overland express, but the O. K of Uncle Sam on an aerial mail delivery route presumably should bring enough "side business," if you want to call it that, to make the whole project pay.

But the trouble has been that prior to the legislation just enacted, the whole system of transportation by air in the United States has been on the "stagger stop" basis. After having invented the airplane, America sidetracked it, and left it in an orphanage hangar. Only when she saw her child on parade, in charge of a foreign nurse within the past year or so, did the mother country grow jealous.

Then came the Bingham-Parker Bill, and the resultant Air Commerce Act, after the Senate and House differances had been adjusted. It is the greatest step toward the full development of American transportation since the passage of the Interstate Commerce Act, creating the Interstate Commerce Commission, and the National Good Roads Law of 1916, which has made automobile travel a soft-cushioned pilgrimage rather than a shake, a shiver, and a detour.

The Interstate Commerce Commission today not only regulates interstate transportation by railroads—the common carriers which were granted certain government subsidies in their earlier days, as commercial aviation now must receive direct or indirect government aid—but the travel by motor busses has reached such interstate proportions that the Commission recently has taken cognizance of this means of transportation on land.

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[1] Member Air Law Committee, American Bar Association; Executive Committee, Comité Juridique Internationale de l'Aviation. Author of *The World's Wings; Putting Laws Over Wings; The Yellow Ace (Japan, a Menace in the Air); Highways and Airways, Their Relation to Commerce and National Defense*, etc.

It scarcely intrigues the imagination of any American, and it does not conscript the foresight of a Jules Verne, to visualize the time when air transportation will be so vital to the nation's defense and its commerce, that there must be created a government body which possibly will be known as the "Interstate Air Commerce Commission."

No one commission, assuredly, could encompass in its regulatory authority the network of American railroads, motor busses and thousands of airplanes, passenger, mail, and freight, flying in the never-never land of the air.

The Bingham-Parker Bill, approved by President Coolidge near the close of the last session of Congress, is a far-reaching step toward the encouragement, rather than the subsidization, of commercial aviation in the United States. If there is subsidy in it, the disguise is so excellent that even the ancient enemies of a "ship subsidy" in the Senate and House didn't smell the essence of danger in the air. Indeed, there is no danger. Today our country probably is the only recalcitrant among the more important countries, which concerns itself about subsidies to the real transportation of the immediate future.

The United States has never subscribed to the Prague Air Code, nor the basic principles of the International Air Navigation Convention of 1919, yet many of their fundamental principles must be utilized in connection with the regulations which the Department of Commerce has issued following the passage of the Air Commerce Act.

The new law gives the business of commercial aviation a legal standing—something it has never had. It provides a uniform system for the licensing of pilots and planes. Even the "gypsy" aviator, who flies from one state fair to another, and takes up passengers for "the thrill which comes once in a lifetime," is made amenable to the new code of the air.

In effect, the Department of Commerce will supervise airplane routes, permits and flights as much as it controls today the licensing of steamboats and the regulation of radio.

"Let Hoover do it," has been a sort of "buck-passing" by-word during both the Harding and the Coolidge administrations. Secretary Hoover, known as the Secretary of Commerce, has broad shoulders, and he never shrugs nor droops them when a new job comes along.

Under the legislation recently approved by Congress, the Secretary of Commerce is given "the duty" of fostering air commerce in accordance with the Act, and, among other things:

> To encourage the establishment of airports, civil airways, and other air navigation facilities.
>
> To make recommendations to the Department of Agriculture as to necessary weather service.
>
> To study the possibilities of the development of air service; to advise with the Bureau of Standards and other government agencies; to investigate and report on aerial accidents; to provide for the registration of aircraft as to their air-worthiness; to provide for the periodic examination and rating of airmen serving in connection with aircraft of the United States; to provide for and establish traffic rules for the navigation, protection, and identification of aircraft, including rules as to safe altitudes of flight, and rules for prevention of collisions between vessels and aircraft.

In other words, the new aircraft inspection and regulatory law is as comprehensive as existing statutes, giving the Secretary of Commerce authority to make inspections of steamboats, and to issue or revoke licenses therefor, or the law giving this same Secretary control of the wave lengths in radio communication. Many kinks are to be straightened out, but a decided step both toward federal regulation and federal aid has been made. That these rather haphazard requirements, enacted by Congress in a general treatment of a comparatively new subject, must be fitted into the law of the nations, as proposed in a convention which this government has never yet ratified, is as inevitable as that the states fell into line a decade ago when the first Federal Good Roads Law was put on the statute books.

REGULATION OF THE AIR

Among constitutional lawyers who have given careful thought to the jurisdiction of the air, there seems to be no question but that the sovereignty in each nation over the air space above its territory is the only theory which will promote the proper development of civil aeronautics. The one greatest need of American aviation has been federal legislation.

We have had no laws governing aviation. Airplanes until now have had the distinction of being about the only thing in America that have not been legislated either for or against. This new bird of sport and commerce has been a legal orphan. It has had an uneasy feeling that there must be some laws that govern it somewhere; but where and what it has not known.

We have reached the stage in the development of aeronautics where the air becomes transportation's "fourth estate." Transportation by land, by water, by rail, and through the air must each in some respect be regulated in different ways. We have passed through the development of national highways, waterways, and now railroads in turn must give way to transportation by air. Aeronautics is largely the development of war, but Congress was faced with the immediate necessity of enacting federal legislation providing for uniform air laws. The Aviation Committee of the American Bar Association has been urging on Congress for years the necessity of legislation defining the rights, and fixing the responsibilities of this strange new activity. But Congress neglected it, not because there was any intelligent objection to it, but for the same reason that a man carrying a load in the snow does not stop to make a sled—he can plow along in the old track without having to put his mind on a new device.

The American Bar Association, at its annual meeting in Cincinnati in 1921, after hearing the report of its Aviation Committee, recommended that its members give their attention to fundamental problems of jurisprudence involved in the proper solution of the demands of aeronautics. Since then numerous bills have been pending in Congress. One of these, the Civil Aeronautics Act of 1923, had the endorsement of every department of the government and was also recommended by the President, and yet it, like all its predecessors, died in that national slaughter of the innocents in the closing days of Congress.

Advocates sponsoring civil aeronautical legislation caused the introduction of bills early in the 69th Congress which were passed by the Senate and House, referred to conferees appointed by the House and the Senate to consider differences growing out of amendments proposed by the House Committee on Interstate and Foreign Commerce, and the conferees' report was adopted by both houses of Congress, and the bill signed by President

Coolidge on May 20, 1926. Thus ends the concerted efforts which have been made by the American Bar Association since its attention was first called to the subject of legislation governing air navigation by a resolution offered in 1911 by Governor Simion E. Baldwin of Connecticut. Governor Baldwin's resolution provided that Congress, under its powers as to commerce, can, and should, regulate by statute flights in the air between states, or between the United States and foreign lands, or our territories of the United States.

THE CONNECTICUT LAW

The American Bar Association, unconvinced at that time as to the necessity for air legislation, failed to take definite action on the subject, but Judge Baldwin, as governor of Connecticut, secured the passage by the legislature of that state of a bill drafted along the lines suggested in the resolution, which he had previously offered before the American Bar Association, with the result that the Connecticut Act of 1911 was the first measure adopted in America regulating aviation. The Connecticut statute is significant in that it marks a distinct departure from the common law theory of negligence.

Transportation through the air has to contend with a natural force—the force of gravity. If an aircraft falls and a wreck occurs, injury is apt to result to person or property. In the opinion of Governor Baldwin, and according to the present Connecticut law, the owner of an aircraft causing such damage is liable to the injured party in damages, although proper care and skill have been exercised.

Some fifteen years after the pioneer legislative recommendation of Governor Baldwin another Connecticut statesman, himself a former governor, steered through the United States Senate the Bingham-Parker Aviation Bill, now the Air Commerce Act of 1926. He was Senator Hiram Bingham, aviator and instructor in flying during the World War. Senator Bingham was a member of the Morrow Aircraft Investigating Board, appointed by President Coolidge in the fall of 1925, and headed by Dwight F. Morrow, of New York.

Action was taken by the American Bar Association in 1920 when it appointed a special Committee on the Law of Aeronautics, and so important has been the work of this committee that the American Bar Association, at its meeting this year in Denver, created a permanent Committee on Air Law, enlarging its duties to cover the subject of the law pertaining to aeronautics, radio and other uses of the air. The Association further authorized its Committee on Air Law to tender its services to the Secretary of Commerce to assist in drafting regulations under the new Air Commerce Act. It can readily be seen that important powers will be lodged in the Secretary of Commerce, and that such regulations will guide and direct our federal government and the individual states on the question of sovereignty which they should, and will, exert over the air.

THE NEED FOR FEDERAL LAWS

The need of federal air laws is most obvious. First and most important, to give the business of commercial aviation a legal standing.

It used to be that big business went ahead first, and had laws cut to fit it afterwards. But not any more. These days investments wait on clearly defined legal rights. Even the Standard Oil Company in this good year of our Lord 1927 won't buy a rich oil field until every Indian heir to the third generation signs a quitclaim deed. If you approach a Man of Millions with the most assured prospect of twenty per cent, he will not budge a dime's worth until he knows what standing the thing will have in the courts.

That is why it has been so difficult to organize commercial aviation companies. Our mechanics have proved they can make the machines. Our pilots can fly them over any obstacles, in the teeth of any weather. Our aircrafts have successfully demonstrated they can carry passengers and mail and express and freight, and do it with a swiftness and sureness that mean incredible savings.

But years have passed, and still our big aviation companies are merely in the "perhaps-before-long" stage. This situation is largely because we have had no legal basis upon which to organize such companies. There have been no laws defining their rights to acquire property in landing fields; no regulations regarding the licensing of pilots, or the inspection of planes; no statutes defining responsibility for loss in case of accidents.

Obviously these matters cannot be left to states and cities. Nothing could have been more disastrous to aviation than a set of conflicting local laws. Flying is so obviously an interstate affair that federal legislation is absolutely required. And it is on the theory that Congress has the power to regulate "commerce with foreign nations and among the several states" that Congress found its authorization for the enactment of the Air Commerce Act. The Supreme Court of the United States has construed commerce as a unit which does not require state laws, and while under the Constitution, strictly speaking, both interstate and intrastate commerce are incidentally subject to regulations by different sovereignties, which as Mr. Chief Justice Taft has recently clearly enunciated, when interstate and intrastate commerce are so mingled together with the superior authority, the nation cannot exercise effective control over interstate commerce without incidentally regulating intrastate commerce, such incidental regulation is not an invasion of state authority.

It has, therefore, come to be recognized by leading constitutional authorities throughout the country, that the uniform regulation of aeronautics is absolutely indispensable to the development of air transportation as an instrumentality of interstate commerce.

The Supreme Court of the United States has also held that the power to regulate commerce is not confined to the regulation of instrumentalities known or in use when the Constitution was adopted, but such power keeps pace with the progress of the country, and adapts itself to the many developments of time and circumstances.

To the business man who has capital to invest in an aeronautical enterprise, three questions are important. First, what are an aviator's rights? Second, what are his liabilities? Third, what agencies have the power to regulate aeronautics and to what extent?

It is in answer to these questions, which would naturally arise in the minds of investors, that federal legislation has been enacted.

LAWS ABROAD

We have lagged far behind European countries in the development of air law. For they not only have national laws governing and stimulating aviation, but the sixteen most important foreign countries have adopted the International Air Code which was formulated at the Prague Congress. We also have the experience of European countries which has already found expression in the International Air Navigation Convention, so far as regulations governing aircraft are concerned.

As early as 1910 an international convention was called in Paris for the purpose of framing a proposed International Convention on Air Navigation. The results of this conference were of little value in solving problems affecting the jurisprudence of aeronautics, because it was found impossible for the convention to agree on fundamental principles involved.

In 1919, at the invitation of the French Premier, delegates representing sixteen of the allied powers again met in Paris for the purpose of drafting an International Convention on Air Navigation. The commission was composed of the following delegates: two representatives from each of the principal powers, United States of America, British Empire, France, Italy and Japan; one representative from Belgium, Brazil, Cuba, Greece, Portugal, Roumania, and Servia.

The convention, which was originally organized for the purpose of drafting the International Convention on Air Navigation, later became the Aeronautical Commission, charged with the duty of advising the Supreme Council of the Peace Conference on aeronautical matters. Underlying the general principles agreed upon by the convention, the basic principle involved in the International Convention on Air Navigation is that the contracting states recognize the exclusive sovereignty which each nation has over the air space above its territory.

The International Air Navigation Convention has been drawn under the commerce clause of the Constitution, insofar as it pertains to the United States. The Convention is coupled with provisions of the Treaty of Peace and the League of Nations. Even though the League of Nations or the Treaty of Peace should never be put into effect, there should be no difficulty in separating the provisions which relate to the Treaty of Peace and the League of Nations from the International Air Navigation Convention, nor any valid reason why the Convention should not be signed and ratified.

The International Commission on Air Navigation was composed of practical men, conversant with the art of aerial navigation, and rules and regulations controlling air navigation were drawn in such manner as to be acceptable to the new industry. The delegates to this Convention have dealt in a practical manner with questions affecting the ownership of the air and legal jurisdiction over air spaces.

Article I of the Convention, relating to international air navigation, provides:

> The high contracting parties recognize that every power has complete and exclusive sovereignty over the air space above its territory.
>
> For the purpose of the present convention the territory of a state shall be understood as including the national territory, both that of the mother country and of the colonies, and the territorial waters adjacent thereto.

The right of freedom of innocent passage in times of peace is granted by each of the states to the aircraft of the other contracting states, except over prohibited areas. When we consider that the question of exclusive sovereignty of each nation over the air space above its territory and territorial waters was the point of dispute in regard to which none of the contracting states could agree in 1910, and the unanimity upon this subject at the present time, we can appreciate the remarkable strides which the world is making in the drafting of air navigation regulations and laws on a uniform basis, which will insure the public safety and will prevent the chaotic condition which would arise if each country, or political subdivision thereof, should undertake to pass air laws without regard to their uniformity.

The list of fundamental underlying principles settled by the commission in their general terms are so broad and well conceived that they give promise of safeguarding the development of the science and art of aviation. In this country we are rapidly realizing that the control of air navigation by the federal government is essential, and that this is not a matter within the province of the separate states.

In addition to the fundamental general principles, the convention defines the nationality of aircraft, and provides for international registry and the display of identification insignia. Aircraft crew and wireless certificates are required to be validated nationally, and certificates of air-worthiness and competency are also required. The necessity and desirability of standard medical requirements is recognized. Control of air navigation in this country by the federal government is not interfered with, nor will commercial aviation be hampered by the national convention, the right being given to each contracting state to "establish reservations and restrictions in favor of its national aircraft in connection with the carriage of persons and goods for hire between two points on its own territory." (Article 16.)

The establishment of international airways shall be subject to the consent of the states flown over, but non-stop flights over, or through, the territory of any contracting state will be permitted along certain designated routes, and aircraft are thereby relieved from any possibilities of detention. Provision is made for landing, departure, and when underway, every aircraft being required to be provided with certificates for registry, air-worthiness, and lists of passengers, cargo, and log-books.

The state flown over has jurisdiction in regard to every breach of its laws for the public safety, and its military and fiscal laws; and equal facilities shall be given to all in the use of airdromes and assistance in distress.

The carriage by aircraft of arms, munitions, or explosives in international navigation is forbidden Photographic apparatus is regulated, and there is a non-discriminatory prohibition of other objects carried where they are carried as measures of national public safety. Military aircraft is forbidden to fly over the territory of other nations.

THE U. S. AND THE INTERNATIONAL CONVENTION

I have never been able to understand why our government has not ratified the International Convention on Air Navigation. The stumbling block appeared to be that the Convention was connected with the League of Nations. I am of the opinion, however, that the words in Article 34 of the Convention relating to the institution of "A Permanent Commission" under the direction of the League of Nations do not mean that the League, as such, has any authority over the Commission, but that the Commission (which has already been established) is an independent one in fact, and that it gives notice of its meetings to the League which sends an official representative not taking part in the discussions, but merely acting as an observer. The decisions of the Commission are communicated to the League of Nations only as a matter of information. If for political or other reasons, the United States should delay becoming signatory to the International Convention on Air Navigation, the participation of the United States in the development of an aerial code and international regulations will be greatly retarded. It is my judgment that there need be no difficulty in adherence by the United States to the Convention.

An additional factor to be taken into consideration is that inasmuch as the United States has adhered to the Permanent Court of International Justice, foreshadowed by Article 14 of the Peace Treaty, adherence may likewise be had by the United States to the International Air Navigation Convention. The result of the adherence of the United States to this Convention would have placed us far ahead in the legal development of aeronautics, in which we have been sadly outclassed by every foreign country.

If we do not enter into the International Air Code agreement, then separate treaties must be arranged with Canada and Mexico in regard to flying across boundary lines.

Flyers in Europe are thus given a wide freedom of action. Boundary lines are obliterated. Commercial companies have a definite legal standing. Consequently passenger-carrying planes are establishing air lines from country to country and city to city.

How Are Disputes to be Settled?

Before starting our world flight the State Department had to obtain permission from every country over which they intended to fly.

As the matter now stands, American aviators have no right to fly over the boundary lines of any other country. This is because we are not signatory to the International Air Code agreement. Moreover, if one of our aviators, after gaining permission to fly over a foreign country, happens accidentally to damage the person or property of a citizen of that country, we have no basis on which we may insist that he be given the benefit of the special international consideration of a flyer under the protection of the International Aeronautical Agreement.

Federal legislation is also important for the establishment of a uniform system for examing and licensing pilots and inspecting aircraft. Whatever faults the governmental administration may have, the public pins, and rightly, a great deal of faith in federal inspections.

Not many years ago the packing companies went "into the air" because it was proposed that the federal government should officially inspect meats being shipped through interstate commerce. Today both the packers and the public reap immeasurable benefits from that inspection. The same has been true of the pure food administrations, and of inspection of plants and seeds handled by the Agricultural Department. For this reason, if for no other, federal licensing and inspection of all planes that are to carry passengers will be a benefit to the Commercial Aircraft Companies.

A man's desire to fly is regulated quite largely by his sense of security. If he is once convinced that it is safe to hop off from Chicago and land in Denver, so that he can make the trip without injuring even his life insurance policy, the air lines will be popular.

If wandering and often erratic pilots are allowed to pick up old planes and start a passenger-carrying line, without any regulations or restrictions, there certainly will be accidents which will dampen the enthusiasm of the air enthusiasts.

In order that examination for a pilot's license and the safety requirements of flying planes be uniform and strictly adhered to, it has been necessary to incorporate such provisions in the "Air Commerce Act." Preferably all pilots should have the same degree of training as is required of military aviators, and for that reason it is felt that the examination for a pilot's license should come through a board of government examiners. The manner, however, of examination, is not so important as that there should be federal authority requiring the examination and providing means for it.

One of the oldest problems in the world, and one that accompanies every new enterprise, is how to decide who is to blame in case of trouble or accident. It is the first problem of the government to lay down rules and laws by which disputes may be settled. There must be courts with authority. There must be codes for the trial, and rules by which it is determined who is at fault in cases of dispute.

Aviation being an entirely new activity in an unused and unexplored element, has found itself in America without law or precedent. As flying becomes more and more common, there will be hundreds of disputes, accidents and actions for damages between flyers and between flyers and civilians. Who is going to try them, and by what rules are they going to settle the disputes? A flyer from West Texas smashes into a deserted oil derrick in Oklahoma. The flyer sues the owner of the well for leaving the derrick standing. The owner of the well sues the flyer for damage to the derrick. Would it be tried in Oklahoma where the derrick stood? Or in Texas where the flyer lived? Would it be tried by a local justice of the peace? In the State Court or in Federal Court?

Suppose a flyer from Utah distributes literature advocating polygamy over Northern California. Could he be arrested in California and tried on the grounds of circulating objectionable printed matter, or would it be left to the courts of Utah to determine whether or not he was guilty and of what? If an aviator from Kokomo, Indiana, should be accused of stealing a propeller from another aviator in Kalamazoo and be caught with it in Denver while on his way to San Francisco with a passenger whose time was valued at a thousand dollars an hour, would Denver authorities have a right to detain him, and who would have authority to accept bail? And if he should be detained and found innocent, whom could he sue for damages in delaying his flight? And where could his action be brought? All these matters must be definitely determined, and that by federal legislation.

The reluctance of Congress to pass aeronautical bills has not been from any real opposition, but purely from a press of other matters, and because the individual Congressman has not been brought to feel the vital necessity of lending immediate and intelligent encouragement to aviation in America. There has been a remarkable unanimity in the opinion of all friends of aviation, and it has no enemies, as to the necessity of the federal government taking steps to regulate and foster this new industry. It needs to be done commercially, and it is vitally necessary to do it from a military standpoint. It is improbable that we are going to have sufficient appropriations to develop military aviation to within half of the requirements of national defense. We can hardly expect so unmilitary a people as America to appropriate much money in times of peace for fighting planes; but we can expect them as a commercial nation to foster commercial aviation to such a point that it will make factories and material available in cases of military necessity.

Those who have felt the urge of this vast new air domain of ours, which in a few years is to be dotted with flying craft, either of our own or foreign countries, have seen to it that the Air Commerce Act was passed. And now it is possible for our new infant, the flying industry, to get a good takeoff. Our government has not been asked to subsidize aircraft; it has only been asked to adopt uniform regulatory methods, to inspect them so as to make aircraft travel safe, to use them so that our people may be given advantages which will accrue from air travel and air transportation, to improve them that we may keep abreast of air development in foreign countries and be able to take our place among the first nations of the world in time of national emergency. Aircraft are the harbingers of national peace and prosperity.

CONCLUSION

As this article, relating to what is ahead of America in the air, was in process of completion, there came this brief but significant announcement from the Department of Commerce, showing the foresightedness and serial alacrity of at least one other nation:

> A trip of investigation to Reykjavik, Iceland, to study wind currents and sunbeams, and their effect upon a future airplane route between Europe and the United States, has been made by two German scientists, according to a report to the Department of Commerce from Berlin. Dr. Danmeyer and Dr. Georgi, who are professors at Hamburg, are the scientists performing the investigation.
>
> The proposed air route would start at Hamburg, and pass by Scapa Flow, the Faroe Islands, Reykjavik, and Cape Farewell, Greenland, and would have New York as its ultimate destination. It is planned to send a large scientific expedition to Iceland next year to investigate in detail all conditions which would likely affect the operation of airplanes over the comtemplated route.
>
> Persons in Germany interested in the project say that under favorable circumstances the projected line may be opened by the beginning of 1928.

This, in a paragraph or two, is apparently the comeback of Germany, until recently the "lame duck" of the air, following the World War. Germany's horizon, as to commercial aviation, apparently is world-wide. Already, from her crippled condition, she is far ahead of the United States in operation of mail, freight, and passenger-carrying airlines, just as she was twenty years ahead in the development of an air code. Other foreign nations are almost abreast, or coming in on the aerial stretch.

The Passage of the Air Commerce Act last year by our Congress—and may American capital and transportation genius utilize—was not too soon.

Are We Airworthy?

By Lieutenant Donald Duke
Chief, Airways Section, Air Corps, United States Army

TALK with today's busy men and women about flying, and ironically they approve it—for others, yet most of these same people, before many years have passed, will have acquiesced to the safety of properly regulated flight. With demands on their time and presence, assuming proportions impossible of fulfillment by railway or motor, utilization of the wings of progress will follow as a natural concomitant, and the horizon of man's achievement will again be enlarged. And why are we afraid to fly?

The Fearful Public

Fear is habitual with most people, although not many acknowledge it their master. Like fashions and madam's tresses, our fears come and go; childhood ghosts give place to countless other fears equally fallacious. When science proves our pet apprehension to be without foundation, a new model, more enticing and with still more mystery under the hood, compels us to convert our insurance to an eight-cylinder policy, and so the human race advances with fear ever stalking at its heels. Columbus in crossing the ocean proved groundless the fears of his companions, and with the subsequent advent of prohibition made the Atlantic a "best seller." Now over one million persons cross it annually, apparently reconciled to any fear of collision or sinking. Travel by rail at a high rate of speed, guided only by two ribbons of steel, over lofty narrow bridges, around curves and through tunnels, no longer holds terror for a public ever willing but always fearful in adjusting itself to new standards. But what of going aloft?

The drone of airplane motors, or more properly, the hum of their propellers, is becoming a daily event along our well-traveled air routes, arousing little or no interest from those below. What goes on above, within these fast-moving objects, is likewise becoming commonplace to an ever-increasing number of people using this means of transportation for business or pleasure. However, the factors contributing to the scheduled arrival of these winged sedans at distant airports, is a story now emerging from the romantic atmosphere of superhuman achievement to become the plain, unadorned, routine performance of normal human beings.

False Publicity

Air transportation, in spite of unfavorable and unfair publicity, has taken its inevitable place as an integral link in the world's transportation system, and should no longer be judged by the spectacular antics of stunt flyers. Public confidence in air travel has been retarded through the nefarious practice of winged imbeciles, whose exploits, contributing nothing to aviation's progress, have only proved that the best planes made can be torn apart or disabled by forced abuse.

There is no activity in existence that could possibly profit more from a "truth in advertising campaign" than aeronautics, all too frequently the front-page victim of publicity strategists, whose insatiable desire for sensational news forces on a gullible public its daily dozen thrillers. Publicity has long been the accelerator of progress, but as a propagator of aviation it has left the public confused, misinformed, and afraid to "go up." Nor any wonder when one reads news items, almost daily, of sensational and fictitious events in the air, while the sinking of a ship or a railway wreck is of little interest, except for the victims listed. The much abused "air pocket," "stalling plane," "tail spin," "flying coffins," and such other stock phrases in common usage, may have their place in "movie thrillers," but not in commercial aviation of the present time, operating airlines with a day and night flying schedule equal to railway dependability, and in some cases exceeding the year-round performance of our best trains.

DANGERS ELIMINATED

There is no danger in air navigation which cannot be eliminated by adequate precaution; and man, woman or child has no more to fear when taking passage in the well-equipped air transports of today than in vehicles common to the other established systems. All are alike, insofar as skilled personnel, properly maintained operating equipment, and safety precautions are concerned. The train, the boat, and the motor coach have supporting elements no more substantial than the aircraft. It is only that the age has not yet become accustomed to the air, as a supporting medium, that more people do not utilize its advantages. We do not have to look back many years to see our own parents afraid of ocean liners and rubber-tired contraptions, without which present-day social, civic, and industrial standards would be impossible. It is, therefore, only natural that air as a medium for transportation should be put to practical and profitable use at this time, since it is just as essential to the continued progress of mankind as each successive method of transportation has been in the past.

For centuries, primitive man transported commodities on his back, until reason and experience placed this burden in turn on the beast, boat, stagecoach and railway. Today finds the United States leading the world in railway mileage, with a standard of service likewise unequaled, yet the man in New York, whose presence is required on the West Coast or in a southern state, is already growing impatient at the loss of time required to transact his business and return. One of our large automotive corporations is already putting to practical use a luxuriously appointed ten-passenger plane for transportation of its officials, between general offices and factory one hundred and thirty-five miles distant. Business emergencies, necessitating hasty conferences of scattered executives, are thus satisfactorily met, and action expedited in a manner impossible with surface transportation facilities. Using a multi-motored plane of proven airworthiness, flown by a pilot of proven ability, between well-equipped airports, with known intermediate landing fields and beacon lights at intervals along the route, these officials not only travel safely and comfortably at a great saving of time, but with impunity invite their guests to accompany them, regardless of the fact that twenty-five per cent of their flights terminate after dark. The number of privately-owned planes used for commuting from the country home or for sport flying is increasing each year, and only the present lack of adequate, close-in airport facilities makes this practice less appealing to the business man, since the cost of planes suitable for this purpose is about the same as the car he now uses.

And again the query—why are we afraid to fly? Is it because lacking feathers we hesitate to encroach upon the bird's domain? Then where are

INTERIOR VIEW OF PRIVATELY OWNED AIR LINER the scales and other habiliments to make our ocean voyage consistent? The hesitancy of severing contact with mother earth to soar aloft is sometimes ignominiously attributed to the wives and mothers, but "the man who can hide behind a woman's skirt these days is not a coward—he is a magician."

FLYING SAFE

Contrary to public opinion, and in spite of Newton's laws of motion, flying, when conducted with the same care and regard for safety precautions as are applied to railways and ocean navigation, is equally safe and equally deserving of public confidence. Engineering standards are more exacting in aircraft construction than in any other public vehicle. The factor of safety is far greater than needed for the maximum load to be carried. The much-heralded flaming plane—a rare event even during the war when gasoline tanks were the target for incendiary bullets—is a present-day anomaly, since the danger of fire in the air is no greater than fire in a boat, train, or automobile, and in either case there are the usual fire preventatives and a suitable method of escape.

After ten years of travel by air, rail, automobile, and on the hoof, I am convinced that getting about below makes one think faster and jump quicker than in the great open spaces aloft where railway crossings, street intersections and stop-go signals become memories of earthly vesture. If given my choice of vehicles for a trip to the West Coast, or any distant city with a good airport, I would unhesitatingly choose the plane for both myself and family. It would get us there quicker, without the monotony of railway travel and the discomforts of water travel. John Logan, poet of the eighteenth century, has beautifully expressed, in the following lines, his vision of what should now be a common occurrence:

> Oh, could I fly, I'd fly with thee!
> We'd make with joyful wing
> Our annual visit o'er the globe,
> Companions of the spring.

The common misconception exists, that because one cannot gaze upon the troubled waters from Niagara's brink, or walk on the edge of a precipice without dizziness, one would not be a good airman, which is not at all the case but, on the contrary, proves that individual to be normal in this respect. Walking on the edge of a high railway bridge produces dizziness that does not occur on the same bridge in a passenger coach. It is all a matter of perspective, which in the airliner is made more glorious by the enlarged horizon. I have taken up children, as well as men and women in advanced years, and have yet to see a healthy normal person, who, having flown under favorable conditions in an airworthy plane, did not express a desire to repeat the performance.

Flying is the most wholesome recreation I know of, inducing an exhilerating relaxation, and at the same time providing the opportunity for retrospection and introspection that one seldom feels midst terrestrial surroundings.

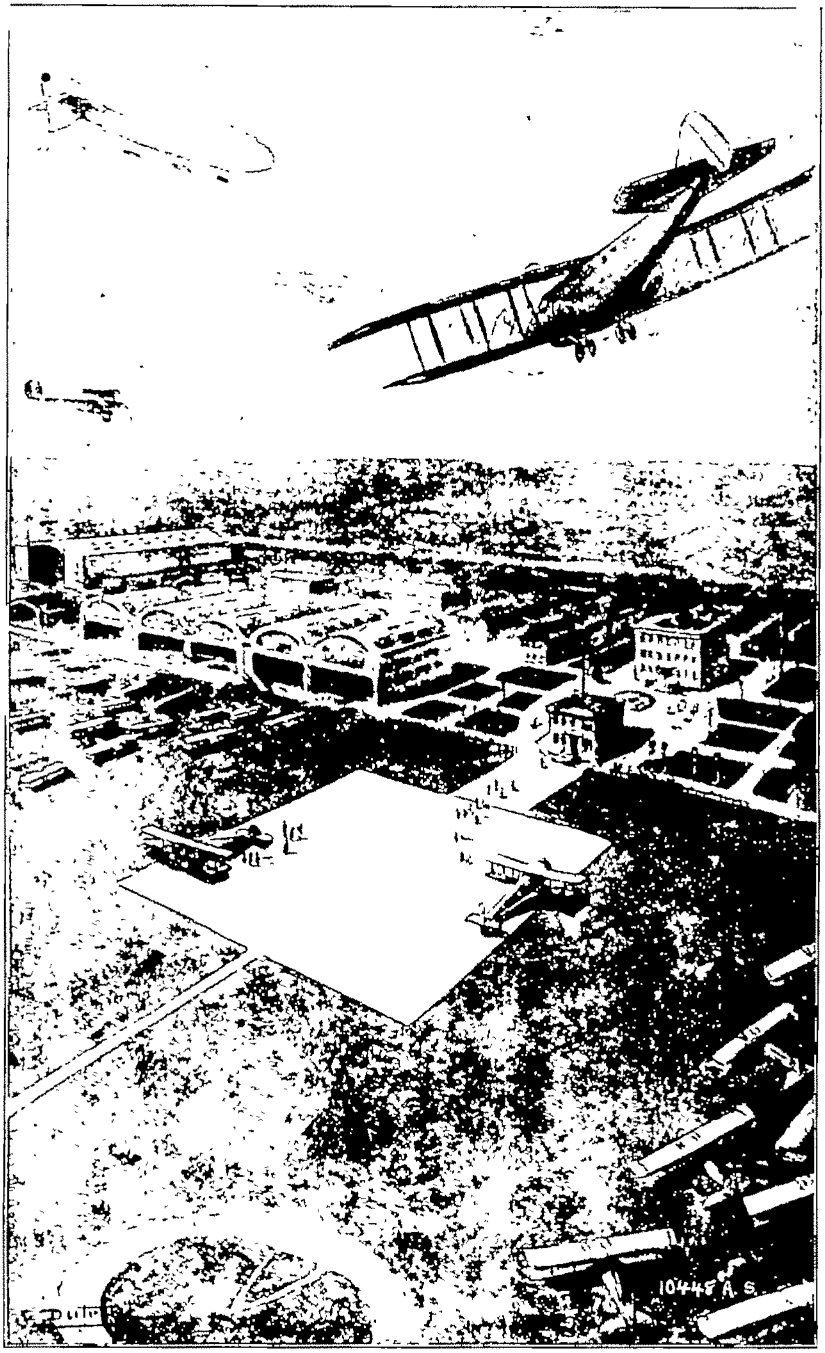
PILOTS

While monotonous to an extent for the pilot, particularly at night, there are many aviators in the military, air mail, or commercial service who, in the ten or more years of flying, have spent a large portion of their time in the air and still find it too fascinating to give up. Contrary to another misconception, these pilots, like wine and a certain type of automobile engine, improve with the passing years. The seasoned airman is better equal to the added responsiblilities of aviation's progress than is the younger flyer with less time in the air. The average person of either sex can learn to fly if given sufficient instruction, but only a small percentage become expert. The annual report of Major General Mason M. Patrick, Chief of Air Corps, U. S. A., has the following pertinent remarks in this connection: "It becomes more and more apparent that some men can learn to fly and others cannot, just as some have musical or mathematical ability and others do not. The attempt to teach one who lacks it is a waste of time, money and effort." While fifty-six per cent of the applicants for flying training at military schools pass the required physical standards less than thirty per cent of those accepted receive the coveted rating. It is in these schools that a majority of the pilots now flying commercial aircraft have received their training. The employment of pilots for aircraft operation, therefore, is one case that admits of no compromise,—skill and experience being indispensable prerequisites to safe and conservative flying.

SAFEGUARDS

Providing the proper safeguards for interstate air navigation has presented many new and interesting problems to the engineering and legal professions. The aircraft en route from New York to Chicago, with its passengers, mail, and express, differs from the railway train bound for the same place, only in speed and the supporting element. The station becomes the airport; the train dispatcher the operations officer; the way station agent corresponds to the emergency landing field attendant; the roundhouse becomes the hangar; and the block signal system of the railway is analogous to the ground panel signalling system, just coming into use on some of our airways. Having no rails to guide it, the aircraft traverses an airway, which word, being too new for the dictionary, may be generally defined as an established, identified route, traversed by aircraft and with facilities provided for convenient, safe and economic air traffic. Like a ship at sea, the modern airliner is equipped with radio, not only to report its progress but to learn of weather conditions ahead, which may require a slight change in the course to be navigated, or if threatening, a temporary landing at the nearest airport. The compass and other special instruments indispensable to safe navigation enable the pilot to proceed even though the landscape below may be obscured by clouds or darkness. Beacon lights, both revolving and fixed, identify the path between airports at night, and upon approaching a destination or other required stop, the landing area is distinctly outlined by vari-colored weather-proof electric bulbs. Upon proper signal this airliner glides down from the darkness, to land gently on an airdrome made light as day by a 500,000,000 candle power diffusion light. Passengers and their baggage, again on *terra firma*, are whisked away in waiting motor coaches to hotel, railway, or ocean liner, if necessary, to continue their journeys by these means. The plane in the meantime is taxied into its hangar where skilled mechanics, with tender solicitude, treat it as a thing possessing life. The consideration given to their planes by two of the round-the-world flyers amounted almost to devotion, and was admittedly responsible for these pilots' noticeable lack of trouble due to mechanical malfunctions.

Passengers flying along a well-equipped airway in such an airliner, with conveniences installed comparable to railway travel, have less to fear from collison or accident than when behind a



Soon shall thy arm, unconquer'd steam! afar
Drag the slow barge, or drive the rapid car,
Or on wide-waving wings expanded bear
The flying chariot through the field of air
—"*The Botanic Garden,*" *Erasmus Darwin, 1731–1802*

speeding locomotive, or the driver of a skidding taxicab. Aircraft, equipped with navigation lights conforming to the standard employed on the high seas, are readily discernible in darkness. Both pilot and assistant pilot are on the alert for approaching or overtaking craft. Here again, rules of the air are in force and, due to the almost unlimited choice in altitude and deviation along a horizontal flight path, the possibility of even sighting another plane is very remote, though its schedule and approximate location are known.

With specially prepared maps and facilities for dissemination of meteorological data needed for aerial navigation now being perfected through government aid, and with proven dependability of new aircraft engines, the forced landings of by-gone days have been practically eliminated from well-managed commercial air transportation. However, should it become necessary to make an unscheduled landing, along an airway at frequent intervals are intermediate landing fields marked to make their location easy, and equipped with proper facilities for night landings. Wheel brakes, now used on airliners, have reduced the required landing area to about one-half the distance formerly needed. Other improvements have placed the modern airliner far beyond its wartime progenitor, of which the less said the better.

The failure of attempted freakish aircraft performances, wherein both engineering standards and common sense are sacrificed by so-called "crack pilots" for self-glorification, have no more bearing on aviation's true mission than has one of Will Rogers' non-stop diplomatic flights on our national jurisprudence.

Equally significant and indicative of the hazards peculiar to different requirements in aviation, is the record of one commercial aircraft operator whose planes have flown 4,500,000 miles without a passenger fatality (equivalent to 178 times around the earth), while fatalities in the military services (U. S.) have averaged one per 273,510 miles of flight. The exacting requirements of the latter, in testing experimental devices and new equipment, instruction and formation flights in military tactics, and securing performance data on heavily laden planes, create conditions that do not occur in commercial flying conducted to schedule day after day, along the same routes, with standardized planes of proven performance, and with reserve planes held in readiness at either terminal for replacement of equipment needing minor adjustment. Pilots of commercial aircraft also enjoy a greater freedom from responsibility and fly with greater regularity—two factors essential to keen-edged proficiency in handling aircraft.

PROGRESS IN THE UNITED STATES

We read much of the subsidized commercial airlines of Europe, and statisticians have a penchant for quoting figures on the number of passengers carried by foreign airlines, but little is said of the commercial aviation in the United States, which, without subsidy, is establishing itself on a firm economic basis.

The development of air transportation, since the close of the World War, has made substantial progress, surpassing relatively the early development of water, rail, or automotive traffic. Following in the wake of over-enthusiasm and imaginative prophecy depicting inconceivable accomplishments, aviation, both military and commercial, has responded to a degree almost incredible. Sir Samuel Hoare, British Secretary of State for Aeronautics, has recently said, "Aviation has a habit of providing great surprises and I, personally, am prepared for anything."

With the Department of Commerce establishing, charting, and safeguarding civil airways, restricting air commerce to airworthy planes, and requiring operating personnel to hold airman's certificates, our capricious fears of flying will disappear and public confidence, elevated above the horizon of its own misgiving, will proclaim air commerce, and demand that the airplane's birthplace shall no longer repudiate its utility.

Are aviators afraid? Fear is not a substantial thing that can be photographed or placed on exhibition but rather is known by its fruits. Aviators, as a class, according to an army dentist, are "the biggest cowards applying for treatment," yet these same individuals in the cockpit of an airplane, or the control car of an airship, display with exuberant mastery a skill and courage that finds no parallel in legendary or present-day exploits. Afraid? On the ground, yes; in the air, no. The lieutenant frightened speechless by a general's rebuff has no fear of leaping into space with his parachute should this become necessary. What the psychiatrist calls a complex is the airman's *ce n'est rien.* Magnanimous through environment he is not the pretender judged by earth-bound critics after their own standard, but copes ever astutely for the mastery of self, that self-control which in every phase of human activity characterizes true achievement with progress its recompense.

Air commerce in the United States, already a reality, is rapidly spreading its network of airways to better serve its homogeneous millions, 34.3 per cent of whom dwell in ninety cities of over 100,000 population. The airlines of Europe, far advanced by comparison, are likewise extending their facilities to Egypt, India, South Africa and distant Australia. In all countries of the world, air transportation is an accepted requisite, both for economic development and national defense. Facilities, skill, and experience, necessary for the establishment of a trans-Atlantic air route, are available in the United States today. This link, indispensable to world air commerce, is inevitable, and more than 1,000,000 people who now cross the Atlantic annually are awaiting a better and faster method of transportation.

With planes overhead in constantly increasing numbers, have we not already seen the realization of Tennyson's prophetic vision in "Locksley Hall":

I dipt into the future, far as human eye could see,
Saw the vision of the world; and all the wonder that would be;
Saw the heavens fill with commerce, argosies of magic sails,
Pilots of the purple twilight, dropping down with costly bails; . . .

Some Economic Aspects of Aircraft Transportation

By Stephen B. Sweeney
Instructor in Insurance, University of Pennsylvania

IT is usually exceedingly difficult to intelligently consider any particular phase of a very broad subject without first getting a general picture of that subject. This is especially true of so recent a development as aircraft transportation.

But an accurate general picture of aircraft development is difficult to obtain in these days of rapid progress. In addition to the difficulties caused by constant change, we have those resulting from the inaccuracies of newspaper and quasi-scientific journal reports, as well as the confusion caused by statements of extremely optimistic promoters and generally interested individuals. The only safe course is to confine oneself to the limited, statistically supported information, and the conservative statements of some few trustworthy authorities.

The Present Development

The term "aircraft transportation" includes, in its broadest sense, lighter-than-air (dirigibles, etc.), as well as heavier-than-air (airplanes) craft. But in most of the current discussion of the subject the term is practically confined to transportation by airplanes. There are some few instances of successful commercial dirigible operation, in Germany in particular, but they were largely sporadic post-war gestures. Any mention made of them must be merely to indicate possibilities in other than the present most exploited field.

Regular aircraft transportation has already made many formerly distant cities "overnight neighbors" of each other, at least as far as mail and passenger communication is concerned. An examination of air maps will show a surprisingly heavy network of regular air lines spread over Europe, fair beginnings of such a network in the United States, Australia, and parts of Asia and Africa, and a brave start in South America.

A World "Air-Picture"

An interesting picture, but a difficult one to draw because of the paucity of statistics available, would be a series of yearly maps, of Europe particularly, since the close of the World War. Attempts at regular aircraft transportation had been made prior to 1918, but they were either distinctly experimental or military. Former Professor E. P. Warner, now Assistant Secretary of the Navy in charge of Aeronautics, made the following generalization in 1922, after a European air tour: "The routes will be observed to fall into four general classes, those radiating from London, the lines of Southern France and the Iberian peninsula, those of Germany and Northeastern Europe, and the French lines running to the east and northeast from Paris." A superficial examination of the development to 1927 does not seem to bear this out. The network seems to be a more or less general maze. But yearly maps would show that additions since 1922 could practically all be placed in some one of the four general classes outlined by Professor Warner. France, England, and Germany are still the outstanding centers of development. This is partly because of the presence of some of the economic factors discussed below. But the main explanation for the intensity of development of these centers is a political one. France has spent millions of dollars in subsidy each year despite a long unbalanced budget. England and Germany have not been far behind.

The more important recent developments are those pushing the means of rapid communication into the East. Moscow, Rostov, Batum, Constantinople, and Angora may now be reached in relatively few hours by air from Paris, Berlin, and London. There are nine daily services from London. An air trip from Cairo to Bagdad seems confronted with many difficulties, but its accomplishment is now regularly possible.

The Mediterranean is rapidly being "bridged" at many points of its western end. Casablanca, Oran, Algiers, Biskra and Tunis are now one-day excursion points from Europe and look like starting points to try out the possibilities of air transportation in Africa. (*See* map page 176.)

The air transportation map of the United States is not so similar to a close network. Vast distances are practically wiped out here, however, as far as mail is concerned. New York and San Francisco are now approximately thirty hours apart instead of five days as formerly. "Wing tracks" may now be found wending their way directly (or indirectly via the transcontinental air mail route), toward Chicago from many such outlying points as Seattle and Pasco (Washington), Los Angeles, Pueblo, Dallas, New Orleans, Miami, Boston, Detroit, and Minneapolis. (*See* map page 171.)

South America made its start, thanks to enterprising, efficient Germans. "Efficient" because the regular service maintained between Cartagena and Bogota is said to be the only self-supporting common carrier air transportation company in the world at the present time.

Our world picture is not complete until we note that Australia is well on the way toward completing an air circuit between its most important cities. Inland points, as well as seaports, are connected, and it is not hard to imagine Perth and Adelaide, Sydney and Charleville, and Camooweal and Derby joined by air in the near future to complete the circle.

Statistics of Air Transportation Development

During the years 1920–24 over twenty-five million miles were flown throughout the world over regularly operated air routes, and it is estimated that this aggregate was increased to thirty-four million miles by January 1, 1926.

Some idea of the rapid increase in mileage flown during these developmental years may be gained from comparing the 1920 mileage figure of one and three-quarter million, with the 1924 figure of eight and one-half million.

Some other increases of interest are:

1. The number of miles of regularly operated air routes from 6,794 to 19,148, or an increase of 181 per cent.
2. The number of completed trips over regularly operated routes from 5,920 to 36,445, or an increase of 515 per cent.
3. The number of passengers carried one stage or more from 9,233 to 66,262, or an increase of 617 per cent.
4. The pounds of express carried one stage or more from 482,230 to 3,813,586, or an increase of 690 per cent.
5. The pounds of mail carried one stage or more increased from 566,744 to 2,839,836, or an increase of 401 per cent.

Europe naturally commands first consideration in any examination of commercial air transportation. This is a disputed point if technical progress is the accepted criterion; but it is indisputable if mileage flown and operating experience built up is to be the test. The latter seems the more practical measure.

Of the twenty-five million miles flown throughout the world from 1920 to 1924, Europe was responsible for seventeen and one-half million, or 69 per cent. The United States came second, with six and three-quarter million, or 26.6 per cent, and then Colombia and Australia combined, with a little over one million, or 4.4 per cent. Miscellaneous statistics covering the period to date indicate that the above order is still indicative of relative activity.

As will be seen from the following statistics, Europe's development has been general throughout the range of the points of transportation interest. During the period 1920 to 1924 inclusive the following increases are worthy of note:

1. Number of miles flown, 380 per cent.
2. Pounds of mail carried, 3,080 per cent.
3. Pounds of express carried, 650 per cent.
4. Number of passengers carried also increased 590 per cent.

It will be recalled that France, England, and Germany were mentioned as the focal points of European commercial aviation. The following figures substantiate the map impression. Regular French lines were responsible for eight million miles, or 31.9 per cent of the total four-year world mileage. This was 5.4 per cent more than the United States with its world-acclaimed air mail (before the beginning of its present seventeen feeder contract routes). English planes flew three and one-half million miles, or 13.9 per cent of the total. German planes flew a little over three million miles, or 12.6 per cent of the total.

Development and Subsidy

These three countries have another point in common along with all other European countries. From an economic standpoint all of their lines are parasites. "The total subsidies of England, France and Holland for 1924, at the current rate of exchange amounted to approximately three million dollars."[1] In 1926 the French government voted the largest subsidy to date.

This aid, that makes their continuously unprofitable operation possible, takes the form of direct and indirect subsidy. The direct can be generally summarized as follows:

1. Generous loans over period of years at no interest (England and Holland).
2. Payment for specified air mail routes (Germany).
3. Annual money grants based on distance flown, etc. (France).

The indirect subsidies can be so extensive and complete that their costs do not lag far behind the direct. They take any or all of the following forms:

1. Creation of airports (where government hangars and other facilities are rented at a nominal sum).
2. Dissemination of meteorological knowledge.
3. Free use of radio communication facilities.
4. Development of technical appliances.

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[1] Department of Commerce and American Engineering Council Joint Report on *Civil Aviation*. McGraw-Hill, 1926. This is a very complete and scientific report and is the source of a good many of the figures above.

5. Loan of improved types of transport planes.
6. Passage of laws limiting the liability of air transportation companies.

These subsidies are justified on various grounds. The so-called "infant industry" argument is often heard in disguised forms. Usually the various governments consider commercial aircraft development an important factor in defense. A glance at the map of Europe, in light of the last war, explains this. Some attribute the progress and willing lavish expenditure to the education resulting from regular lines throughout the continent. The French give the following justifications for their expenditures:[2] Air lines

1. Serve as a political connection with Roumania and other Balkan states.
2. Interest the Balkan countries in French aeronautical products.
3. Act as a laboratory for service, testing new types of planes, engines and equipment.
4. Facilitate the study of long distance aerial transportation where present communications are in general disorganized.
5. Counteract the influence of English and Dutch lines flying into Paris.
6. Connect France with its colonies in North Africa.

These are typical of the reasons advanced throughout Europe for the maintenance of transportation agencies whose operating revenues range from 6 per cent to 40 per cent of operating expenses. And the trend seems to be toward increasing subsidy with a consequent steady expansion in commercial air activities.[3]

The development in the United States can hardly be attributed to paternalism alone. The routes in this country have had to rest more or less on their own merits from the economic standpoint. The purely commercial projects in this country have never received any direct governmental aid. What little indirect aid they have received, such as the activities of the Army Airways, has been negligible. Even the government operated air mail has abolished services ardently promoted at first, but eventually admitted unsound from the dollars and cents standpoint. Any statistics of the United States development up through 1925 usually refer solely to the activities of the Air Mail service, because private activities were largely sporadic and were not scientifically reported. This explains why United States statistics of passengers and freight carried are lacking. There were no *regular* services of these types. With the passage of the Kelly Bill, February 2, 1925, authorizing the private operation of air mail service under contract, along with passenger and freight service, this situation was changed from 1926 on.

It will be recalled that the United States planes flew 26.6 per cent of the world mileage, 1920–24 inclusive. During this period the increase in yearly mileage was from 549,244 to 1,522,763 miles and to 2,076,764 miles during 1924, or a grand increase of 275 per cent. The pounds of mail carried increased from 526,578 to 1,500,034 or 288 per cent.

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[2] Van Zandt, J. P., *Report on the Commercial Air Transportation Activities in England, France, Germany and Holland*, June, 1924, p. 39

[3] Van Zandt, J P, *European Commercial Aeronautics*, May, 1925, p 3 These are two very worthwhile reports prepared for the National Advisory Committee for Aeronautics from first hand information gathered by Lieutenant Van Zandt on trips over practically every European air-way

The Colombian and Australian progress is just as marked. The former is of special interest because it is supposed to be self-maintaining. It enjoyed the following increases from 1920–23 inclusive:

1. Miles of regularly operated air routes from 794 to 1,069 or an increase of 34 per cent.
2. Number of completed trips from 208 to 531, or an increase of 155 per cent.
3. Miles flown, from 2,687 to 180,833, or an increase of 6,629 per cent.
4. Passengers carried, from 12 to 1,084, or an increase of 8,933 per cent.
5. Pounds of mail, from 110 to 23,576, or an increase of 21,360 per cent.

The Australian development is highly subsidized on the basis of knitting together a country of inaccessible centers of population. Its progress is most unusual in view of the short period of operation beginning in 1922. The increases during the first three years are as follows:

1. Miles of regularly operated air routes, from 1,772 to 2,809, or an increase of 58 per cent.
2. Number of completed trips, from 1,045 to 1,853, or an increase of 77 per cent.
3. Miles flown, from 153,521 to 253,072, or an increase of 64 per cent.
4. Passengers carried, from 681 to 1,472, or an increase of 116 per cent.
5. Pounds of express carried, from 6,398 to 11,345, or an increase of 77 per cent.
6. Pounds of mail carried, from 5,468 to 10,406, or an increase of 90 per cent.

All of the figures in the preceding pages cannot help but impress an examiner with one outstanding fact—increase. Whether or not this increase means progress is largely dependent on the individual viewpoint. If that viewpoint is predominantly political and nationalistic, progress can be seen at every turn. If that viewpoint is economic, further data will have to be considered.

SOME DISTINCTLY ECONOMIC FEATURES

The task of examining the distinctly economic features of aircraft transportation is no easy one. Any discussion of them is usually so linked up with political and social considerations that their absolute segregation is well nigh impossible. There are many border-line cases. But for the sake of clarity of thought some such separate discussion must be attempted.

From the economic standpoint the broad general task of commercial aircraft transportation is to add more value to the material moved than the extra cost of the service. This word "material" must be taken in its broadest sense to include mail, freight and passengers. The general question of costs illustrates one of the border-line cases.

For the purposes of this discussion costs will only include those direct costs of the transportation agency. There are bound to be social costs such as government research work, navigation law maintenance, etc. The extent of these costs is almost impossible to compute and spread over the various operations.

There are some general features of this problem of adding an increased net value. The country to be served is an important consideration. In promoting a transportation agency whose outstanding selling point is speed, a high standard of living in the country to be served is essential. Under ordinary conditions speed means little to the nomad, the Chinese coolie, or the mountain trapper. Speed means much, however, where the division of labor is great and people are highly specialized with the resulting complex system of exchange. Economic progress seems to be very definitely tied up with the interdependence of society; and the more interdependent society becomes, the greater will be the premium placed on speed.

Attempts have been made to establish aircraft lines in localities of minor industrial importance. Where the chief occupations are cattle-raising and agriculture, and the market for goods of high intrinsic value is very restricted, these attempts are bound to fail unless they are artificially supported. One authority summarizes this situation as follows: "The airplane has proved of value in sparsely settled regions where surface transportation is difficult or impossible; but traffic in such instances is, and for a long time must be, light. Its chief use will be between large and active centers of population, sufficiently far apart or otherwise so located as to permit material saving of time."

A number of services have been thriving apparently, on more or less unusual situations. One of these is the fact that it is quite the fad in some centers of the world to include a trip by air in any "well regulated tour." The permanence of this asset is difficult to estimate. While it is true that a great many communities and industries depend on luxurious expenditure, it is hardly a safe basis for a transportation system. The capital investment is too great.

Another asset of questionable importance has been the facilitated customs service at air ports. This has been responsible for a good deal of trade, but it is hardly a feature on which to build for the future or on which to base any great investment of fixed capital. If aircraft transportation enjoys the growth predicted for it by its ardent advocates this advantage will soon disappear. Customs clearance will be as involved and as slow as at the centers of other means of transportation.

The Wisdom of Subsidy

When one considers the development of European air transportation, the question of the economic wisdom of subsidy is forced to the forefront. The feeling among experts is that commercial aviation in various countries has suffered in direct proportion to the extent that artificial aid has been received. The feeling is that the conditions surrounding subsidies are not conducive to normal economic growth. Very often they are interfering with normal development. If this is not the case the opposite may be true, *i.e.*, they may be granted too freely, and therefore be employed in a manner opposed to the good of the industry. Lieutenant Van Zandt makes the following summary which would probably be acceptable to most of the authorities in the field: "In general, a policy of direct subsidy grants has not resulted in placing air transportation on a rational business basis. . . . In several instances large contracts for regular consignments of goods have had to be refused by European air lines, because subsidy relations and other handicaps have made it impractical to handle them."

It is generally felt that certain indirect subsidies are absolutely essential. These are hardly considered subsidies in a good many instances because the providing of them is looked on as an ordinary exercise of the police power. Government maintained ocean navigation facilities are taken for granted. It is felt that the provision of essential air navigation facilities is a direct responsibility of the government. The average fixed base operator is not able to provide them. If he could provide them, it would be difficult, if not impossible, for him to prevent competitors from making use of them free of charge, except as regards the use of his terminal fields. Even though the latter could be monopolized, one public official recently voiced the opinion of many when he said: "The time is not far off when a municipal airport will be an essential part of each city's publicly maintained equipment."

While not directly economic, the development of public opinion will have a direct bearing on the success of any enterprise. Airship lines have been projected and all but started, only to be ruined at their inception by most untimely disasters arousing adverse public opinion. It will be recalled that gradual education and favorable public opinion have been given as one of the important reasons for the advanced European development.

Closely connected with this problem is the one of educating the public to avoid unwise investment in aircraft ventures. A few such unfortunate experiences serve to stamp on the public mind an impression that is hard to erase and the evil effects of which are long felt.

There are many points that should be carefully considered by the general public before investing their money in what must remain, for some time to come, a highly speculative enterprise. The method of financing, the proposed routes, the type of equipment (particularly the type of plane in light of the service to be maintained), rates of depreciation allowed, the operating personnel and the character sources and probable volume of traffic are some of them.

As part of this same thought it should be remembered that purely speculative ventures have proved unprofitable. Unusual trips have been undertaken with a view to the advertising benefits resulting. One of the most successful lines in Europe attributes a good part of this success to the fact that it has steadfastly refused to engage in such tempting projects.

Further mention will also be made of the fact that in few instances do we find what might be called economic or cost of production rates prevailing. This applies to mail as well as passengers. We have instances of sharp decline in mail offered when rates were put on an economic basis. This fact introduces a new caution for the investor. One must be wary of accepting present charges for aircraft transportation as indicative of the competitive power of the service with already established means of transportation. This caution is especially necessary when the rates for European air-lines are quoted.

Traffic is Paramount Interest

Probably the most important lesson that each operator has had, and will have, to learn is that traffic must be made the paramount interest. It is at this point that another limitation is placed on progress by subsidized development. Aircraft operators are just like other human beings. They cannot serve two masters well, and if they are looking toward sound development they will concentrate on providing regular dependable traffic service.

If the operators produce a favorable combination of speed, safety, reliability, cost, and availability, it is hardly over-optimistic to predict a sufficient volume of traffic to support operations in the economically advanced portions of the world. Attempts are made at various times to estimate available traffic for proposed transportation enterprises.

Any methods used must be expected to have a high degree of probable error. If this were not so one of the most speculative elements would be absent and the prize of large possible profits could hardly be expected. One such method offered is as follows:[4]

Estimate a. Degree of municipal interest
b. Postal receipts
c. Special Delivery Stamps
d. Postal delivery area
e. General managing, merchandise, etc.
f. Average amount of daily mail and of first class mail destined for places beyond overnight train service

It was found that this last item bore a singularly stable ratio to the total mail at each point, and varied from 1¾ to 2 per cent. This ratio was practically the same in all the cities studied. The traffic estimated from the above data was discounted 60 per cent in making the final estimate of initial traffic.

In common with all other traffic enterprises aircraft operators have found a great problem in balancing their traffic. Usually one direction is more favored than the opposite. A particular phase of this same common problem, that they probably suffer from most acutely, is the problem of intermediate stops. If a space is filled from a starting point to an intermediate point it is often impossible to sell this space from the latter point to the final destination. Then again if the space is completely sold out at the first point to final destination the intermediate point cannot take care of local patrons. These problems are particularly acute in aircraft transportation because of the limited amount of space in the airplanes at present available for commercial operations. It is interesting to note that the Germans propose detachable "gliders" to take care of this problem.

Territory of Operations

In most land transportation enterprises topography is of great moment. Mountains and water are often barriers to railroad extension, and are always costly obstacles to overcome, which costs must be met by the consumer. This is not so generally true in aircraft transportation. As a matter of fact such obstacles are usually assets, as the cost of flying over them does not usually differ materially from other flying. This gives the aircraft operators a competitive advantage which helps bear the relatively higher cost over areas of easier land navigation.

This is not true of weather conditions. These are of little moment with railroads and steamships, but may very materially hinder the economic position of aircraft carriers in certain localities. Catering to traffic interests has been mentioned as of paramount importance. Regularity of service is generally conceded to be one of the outstanding requirements of paying traffic. This regularity means uninterrupted service, as well as service rendered in the time contracted for. In certain localities winter flying has been found impractical if not impossible. In others it is sporadic. Scheduled time maintenance has often had to be sacrificed because of weather conditions. This irregularity is more important on short lines because of the relatively small amount of time saved. These factors should be remembered in determining the soundness of aircraft investment in a given locality.

Many things are said to be *the* problems of successful aircraft transportation. One of these is certainly safety. This is largely dependent on proper organization and maintenance, as is shown by the lower insurance rates enjoyed by well established European air companies over land and water carriers. But the problem still has many unsolved phases. Not the least of these are those of correct altitude estimation, particularly for landing in bad weather, and of two way communication, *i.e.*, from land to plane and plane to land.

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[4] Department of Commerce and A. E. C. Joint Report *Civil Aviation*, p. 77.

Speed has been mentioned as an outstanding traffic factor. This is not strictly accurate. Saving of time rather than speed is the controlling factor. Another examination of the various air maps will show that air lines have not yet entered those areas where short distances are easily and quickly negotiated by a well organized railroad system. The possible time saved is usually relatively negligible in these instances even though great speed is attainable.

Says one authority: "From 300 to 600 miles is the worst possible distance for an overland air route, since that is the distance over which travel by night presents the greatest advantages. It is economically unsound at the present time to attempt to run air lines over routes already well served by railroads if the distance between the termini of the line is such as to make an easy night's journey by through train."

We find the most prosperous companies operating routes requiring more than a night's run by rail, broken journeys to change from rail to boat and back to rail, and those requiring wide detours of surface transportation to avoid bodies of water, etc. These routes offer excellent opportunities for great saving of time over existing transportation facilities.

The location of the airport is very closely connected with the problem of saving time. Instances are given where motoring to and from airdromes consumes as much time as is saved by the extra speed of the airplane over the railroad. This condition would hardly justify the extra rates and hazards involved in the rise of former carriers. Accessible municipal airports are urged as the solution of this problem.

Operating Costs

The idea of cost reduction is a very vital side of this problem of increasing the net utility of objects transported by air. This problem has many aspects some of which have been already referred to indirectly. It seems that the operation of short routes alone is not economical. Aircraft transportation, along with other industrial enterprises enjoying relatively increased returns from large scale operations, seems to be naturally monopolistic. This tendency may be conservatively restricted to given areas but its existence is unquestionable and must be considered. The move toward combination of former competitors in most European countries has been accompanied by great economies and has resulted in more effective support from the large industrial interests.

Connected directly with the cost problem is that of developing a satisfactory commercial plane. No really satisfactory commercial transport airplane has yet been developed. Its development involves the following factors:

1. High pay load per horse power installed.
2. Large comfortable cabin.
3. High cruising airspeed with a low landing speed and a good rate of climb on take off.

So far, the above has been an impossible combination. Some one or two of the factors has been necessarily neglected with a consequent reduction in commercial efficiency. A part of this problem has been that of the suitable number of engines. Anywhere from one to four are in use and it seems that up to the present the single engine planes are most reliable in service.[5] A new type of three engine plane, designed especially for commercial use is being built at the present time and great things are hoped for it.

The fitting of the plane to the particular type of service is also very important from the standpoint of efficient operation. An airplane designed strictly for goods service will save 5 per cent or more of the light weight of the same plane equipped for passenger service. Use of old war stocks and the general attempt to combine both types of service has resulted in less economical operation on this score.

There has been extensive discussion as to which is the best plane, all metal, "stick and wire," or welded steel tube. Various countries seem to be prejudiced in favor of a particular type. It is felt that the life of a duralumin plane must be measured in thousands of hours but the cost of such a plane is greatest. The following are some of the factors that must be considered in choosing the most economical plane:

1. Initial comparative investment.
2. Rapidity with which vehicle may become obsolete or inadequate.
3. Ease of maintenance and repair facilities along the route.
4. Character of likely weather.
5. Availability of shelter.

In the last analysis it is net earning power that counts.

Adequate insurance has been one of the cost "bugbears" of commercial operators. Full protection constitutes:

Property coverages on Plane and Cargo against,
1. Accidental Damage.
2. Fire.
3. Windstorm.
4. Lightning.
5. Burglary and Theft.

Third Party Coverages.
1. Public Liability.
2. Property Damage.
3. Workmen's Compensation and Employers' Liability.
4. Legal Liability for Passengers—for injuries.

Personal Coverages.
1. Life Insurance—pilots, operators and passengers.
2. Accident Insurance—pilots, operators and passengers.

This last is necessary because, with very few exceptions, passengers nullify any recent personal insurance during aircraft flight. While the first two groups are direct costs of production, provision of the last at reasonable rates is a problem vitally connected with the welfare of the enterprise. Non-fixed-base or "gypsy flyer" operations, and the necessary dependence on meager war experience statistics have made insurance rates practically prohibitive. Many operators have been following the dangerous practice of carrying their own risks with the almost surely disastrous results that eventually accompany such a practice. The insurance outlook in the U. S. at present is brighter than it has been for years, however. The close of the pioneer years 1919, 1920 and 1921 found all of the companies abandoning the field to "The Travelers." This lone company persevered right through to the present and has been recently joined by The Indemnity Company of America and The Independence Companies. It is hoped that others will forget their "gypsy" experience and soon re-enter the field.

Schedule maintenance has been mentioned as most important. This means a reserve of at least 30 per cent of the planes in daily flight. This adds another cost to any sound operation estimate.

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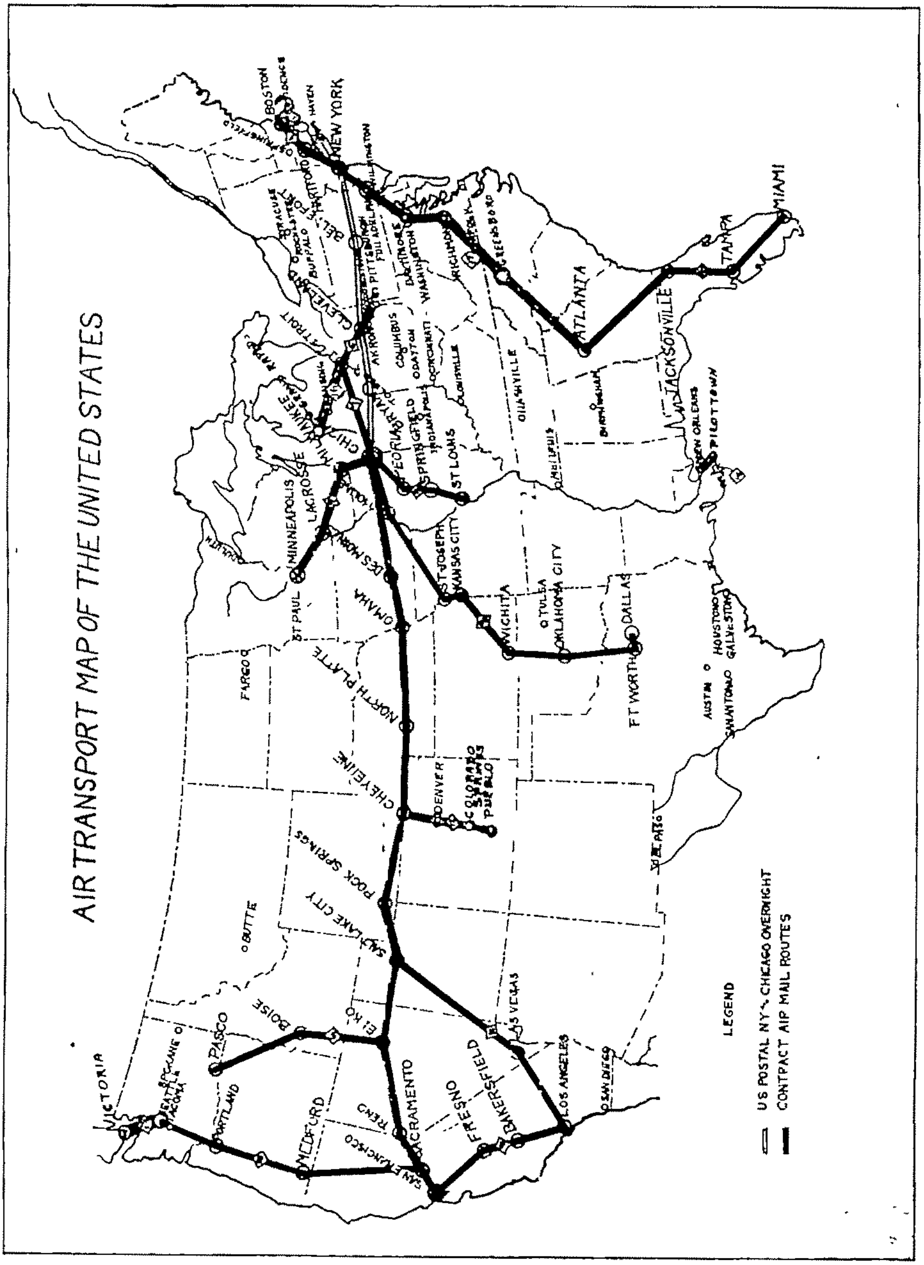
[5] Van Zandt, J. P., *Report on Commercial Air Transportation Activities in England, France, Germany and Holland*, p. 6.

finally being forced to limited accord by economic necessity. Thus an examination of Europe on a national basis becomes of necessity an international examination, despite the most earnest attempts at segregation of data.

It will be recalled that the outstanding characteristic of European aircraft transportation is generous subsidy. This means that not one line in Europe is on a paying basis. Such a condition vitiates any value in a comparison of


AIR TRANSPORT MAP OF THE UNITED STATES

rail and air rates, because, in practically all instances, air rates are based on the general principle of "what the traffic will bear." Contracts for goods traffic on routes such as Paris-London, where competition is keen, are often placed at rates far below the actual expense of transportation. Despite this condition Investigator Van Zandt says: "European experience presents evidence that it is possible for air transportation under suitable conditions to be conducted with a degree of regularity, safety and dispatch sufficient to establish it as an important channel of commerce in the transportation resources of a nation." This statement is probably prompted by the fact that the heavy investors in aviation in the important European countries are the leading industrial, shipping, banking, and forwarding organizations.

The fact of great European growth in the last five years has been discussed heretofore. It is interesting to note that this growth has not been uniform among the various nations. Great Britain has always led in the number of passengers carried, but is being pushed rather hard by rapidly developing Germany. France has first place for accumulated mileage and goods carried.

Great Britain's lead in passenger traffic is not due to the fact that her people take to air transportation most naturally. As a matter of fact they are excelled only by the French in their reluctance to leave the ground. The Germans and Dutch people are said to be natural air travellers. Great Britain's passenger traffic has been largely made up of American tourists who probably desire to get their socially necessary thrill over with as soon as possible.

The regularity of European traffic generally is a mooted point. Optimists and promoters claim it to be very regular but sometimes qualify their remarks by, "as regular as could be expected," or "regular in summer." Pessimists, and many Europeans in particular, claim that its regularity is far from desirable. Even statistics on this point must be taken "with a grain of salt." They do not usually include the number of trips scheduled but not commenced, due to bad weather and other causes. It must be remembered that the northern part of Europe is subject to fog a good part of the year and this materially interferes with regularity. England and Holland in particular are sufferers on this score, and their irregularity will probably continue to be a handicap to sound economic progress until radio signalling technique makes further advances.

Closely connected with regularity and completeness of service is the problem of night flying. Experiments have been being conducted on the London and Paris routes as well as on the Berlin-Copenhagen-Stockholm, the Belgrade-Bucharest and the Paris-Prague routes. But development along this line will probably have to await further international accord and co-operation because the political situation interferes with thorough ground organization. Perfected ground organization such as beacons, emergency fields, radio reports, etc., is an absolute essential of night flying.

Great Britian

The particular subsidy conditions of Great Britain are as follows:

The lines (excepting the Bagdad to Cairo which is operated by the government) are developed by a private company with a government subsidy. This subsidy is fixed at one million pounds sterling over a period of ten years, and divided into annual amounts decreasing proportionately.

The repayment of this sum is provided for whenever the final profits of the company are superior to a fixed scale.

The government controls the administration of the company.

The last point is important. Most European nations keep a large amount of control of the companies. Sometimes this has had bad economic results and sometimes good. One good result in Great Britain was the compulsory consolidation of former competitors into the "Imperial Airways, Ltd.," as of April 1, 1924. This effected many worth-while economies.

One result of this consolidation was an agreement with the Deutscher Aero Lloyd for more efficient handling of their joint route to Berlin. The companies fly in opposite directions each day and thus furnish a regular daily service at a greatly reduced cost.

Great Britain seems to have gone the limit in centralization and has suffered somewhat from the elimination of healthy competition and too close relationship between civil and military aviation. But this centralization has probably helped make possible its most thorough regulation, which many feel is largely responsible for the excellent safety record of English subsidized lines.

The British insurance companies are well organized and have likewise combined to handle aircraft insurance. This has resulted in better, cheaper, and more efficient service, which is an absolute essential for the sound development of an enterprise which is so naturally hazardous at best.

France

Any separate discussion of French aircraft transportation should begin with an understanding of the most liberal of subsidy policies found in that country. Most writers feel that France has suffered more as a result of the misuse of appropriations than she has gained from her leadership in mileage. The Franco-Roumaine company is one of the least profitable but its politically strategic position is the main excuse for its existence. The Roumanian, Czech-Slovak, Polish, and Yugo-Slav governments all contribute to its support.

The general subsidy conditions are as follows:

French lines are operated by private companies with government subsidies which are accorded in the forms of premiums.

Purchase Premium on the cells and motors, equal to half the cost.

Distance Premium, in proportion to the number of kilometers covered and the amount of tonnage carried.

Administration Premium, fixed each year for each company.

Profit Premium, proportionate to the excess of receipts over expenditure.

Supplementary Distance Premium (equal to 50 per cent of the distance premium) in order to balance the development account of the Company if it is in debt.

Government participation in eventual profits from development is provided for according to certain conditions.

The State controls the administration, finance, and bookkeeping of the companies. The "Conventions" are signed between them and the Government (up to the present, annual and in the future, decennial).[7]

Besides the above, France has been most liberal in its indirect subsidy provisions. At Le Bourget, the terminal airdrome for Paris, eleven reinforced concrete hangars have been built and are rented at nominal amounts.

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[7] For further discussion of European subsidy conditions see the International Chamber of Commerce Supplement to No. 8 of the Journal.

It is known that all of this liberality has its basis in the desire for military strength, and it is generally felt that this is responsible for the hostility that the French lines have had to cope with throughout Europe, particularly in Germany and Spain. It was the Franco-Roumaine line which lost twelve planes in 1923 as a result of forced landing in Germany. It was not until May 8, 1926 that France, Germany and Belgium finally reached agreement as to reasonable aircraft intercourse.

This agreement will possibly put French lines on a sounder economic basis. They too have been consolidated. Five lines are at present operating under the subsidy conditions outlined above. It is hard to say which has the brightest prospects. The Latecoere Line to Morocco has the best record for regularity and mail carriage. This line also traverses such long distances that the large saving in time makes small delays of less importance. But it is faced with the difficulty "that Morocco and Algeria are not of sufficient industrial importance to support an air service of the magnitude required. . . . To circumvent this situation Latecoere is actively promoting an extension of the Moroccan line down the African coast over 1,000 miles to Dakar there to connect with South American mail and passenger steamers."[8]

France enjoys one advantage over the rest of Europe. It is the main exporting center for valuable articles of small bulk. Aircraft transportation is so costly that its main resource will long be such "de luxe" traffic. The French failure to build up a helpful mail traffic is probably due to the fact that the service, except Latecoere's, is too irregular. Another explanation is the old one of international strife, which must be overcome before mail service can be made acceptably efficient.

French insurance (and thus reliable operation) has been aided greatly by careful inspection of planes by the "Bureau Veritas" a semi-public organization. But the service is not on a par with the British. One bright spot for the operators, however, is the law of June 3, 1924, which establishes the freedom of the air company from responsibility for goods or passengers, if so declared on the ticket or bill of lading. This materially reduces the carriers insurance cost and puts him on a somewhat firmer competitive basis.

Germany

When one thinks of Germany and air transportation the name "Zeppelin" probably comes to mind. There is little doubt that the Germans have made the greatest progress in the development of lighter-than-air craft. It is even claimed that Germany just before the war operated a regular commercial Zeppelin service between Cologne and other Rhine cities. But confirmation of the existence of such services at the present time is lacking. The technical economics of lighter-than-air craft has been treated extensively by one German writer but the extent to which this has been put into practice is uncertain. The recent transfer of most of the Zeppelin production interests to the United States seems to indicate a shift in the location of future development. It might be said, in summary, that lighter-than-air commercial operation calls for a much greater capital investment and a larger force of technical and operating experts, which combination would seem to oppose any rapid development.

German subsidy conditions are probably more conducive to sound progress than those of any other European nation. They are granting subsidies for the transportation of mail bags and for the replacement of material. The air mail allowances are a fixed amount based on the number of flights and the useful carrying capacity of the plane operated on specified routes during six months of the year. The company agrees to carry up to a maximum of 100 kg. of mail per trip, if it is offered. The actual receipts from the sale of air mail postage go to the state, so that when the average load of mail develops to 100 kg. for each flight undertaken, the government will receive an income proportionate to its payments to the air transportation company. This is now practically a pure subsidy.

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[8] Van Zandt, J P, *Latecoere Air Lines*, August, 1925.

Formerly there were two controlling lines in Germany, the Deutscher Aero Lloyd Aktien Gessellschaft, and the Junkers Luftverkehr. The former was the result of the amalgamation, on February 6, 1923, of the majority of independent air lines. It was backed by such interests as the following: Hugo Stinnes, Thyssen, A. E. G., Hamburg Amerika, Nordentscher Lloyd, Robert Mayhoefer, and the Deutsche Bank. The latter was unique in that it was controlled by an aircraft manufacturing company and operated to create a market for the sale of its airplanes. These both had various subsidiaries in other countries, particularly Russia. Great economies were probably effected by the consolidation of these two major groups into the Deutsche Luft Hansa during March, 1926. This probably gives the Germans the most powerful single air transportation line in the world.

The fact that the German lines under least liberal subsidy have operated with a better safety record than the French, and at the same time more economically, is probably the result of their superior organizing genius which is everywhere apparent.

The occupation of the Ruhr gave a rather unique impetus to aircraft transportation, and illustrates the occasional advantage the possession of such a service may afford. When the French practically stopped all land transportation to and from the Ruhr there was an extensive heavy goods air traffic built up between London and Cologne.

The greatest German handicap has been the limitation on size and power of aircraft imposed on them by the Treaty of Versailles. With the removal of this limitation in the supplementary agreement of May, 1926, the German aircraft transportation business received its greatest impetus toward sound development. If the Germans succeed in operating the proposed 5,000 miles service between Berlin and Vladivostok they will reduce a 13½-day trip to a 50-hour trip. This would be as epoch-making event in their progress in the East.

German insurance is taken care of by a very close pool. Its statistics are kept secret, but it is known that German planes enjoy very low rates as a result of their fine safety record and the legislation favoring the common carrier. This is one of their many cost advantages in international competition.

Holland

The only other European country deserving separate discussion of its aircraft transportation activities is Holland. The Dutch services are unique in that they were started by business men as a purely business proposition, and were not subsidized until after they had been running long enough to prove that this was too great a handicap under present European conditions.

The subsidy was fixed arbitrarily at a maximum of 1,400,000 florins (about

$560,000), and divided into annual amounts which were to be eventually reduced according to the profit and loss account of the company.

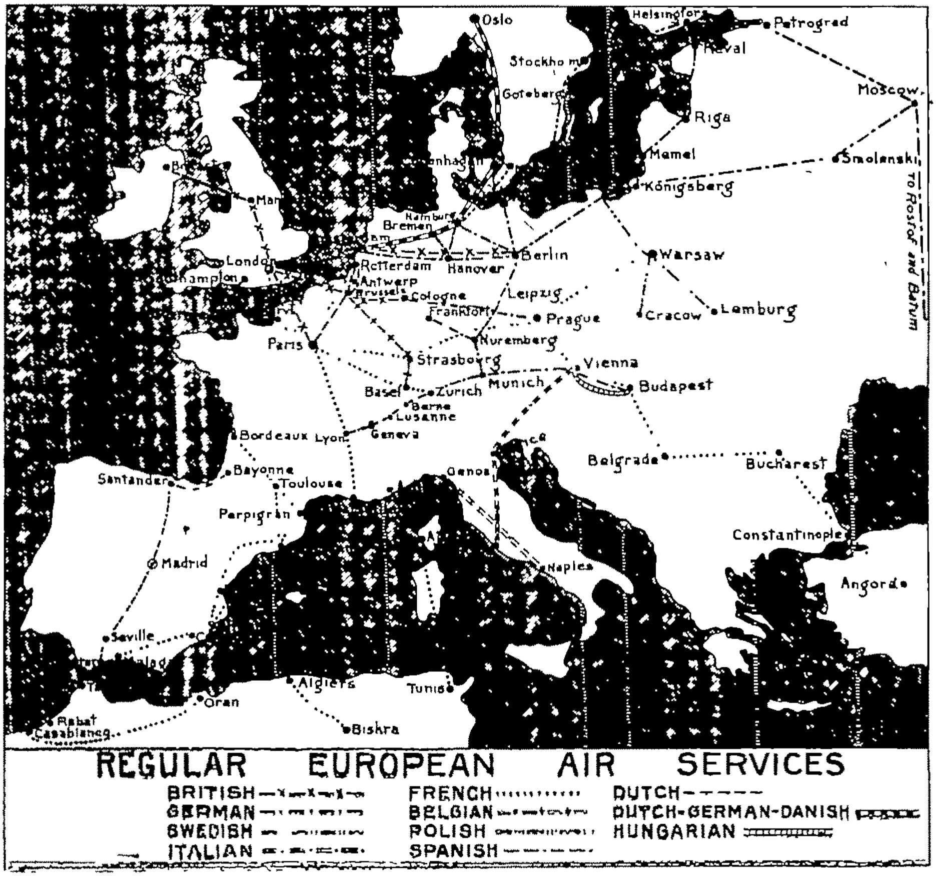
The repayment of this amount to the government was to be provided for out of the profits.

The government controls the administration and bookkeeping of the company.

The conditions of the subsidy are not very exacting, which probably helps to explain the fact that they obtain a higher percentage (40 per cent) of their operating expense from operating revenue than any other line in Europe. Another explanation of this efficiency is probably the fact that the Royal Dutch Air Service has steadfastly refused to engage in speculative ventures for advertising purposes, with the single exception of the Dutch East Indies flight.

The fact that 12½ per cent of schedule flights are wholly or partially prevented on account of bad weather, indicates one of the main handicaps air transportation suffers over land and water routes in Holland. Despite this bad weather Holland has a good safety record and even indulges in the usually precarious undertaking of self-insurance. The company sets aside each year a reserve (probably a bookkeeping one) equal to about 25 per cent of the investment in flying equipment.

Other countries in Europe have enjoyed negligible development or their



REGULAR EUROPEAN AIR SERVICES

lines are tied up with those of the four countries discussed above. It is certainly an unusual and interesting situation to have three or four countries contributing to the support of another nation's transportation service.

The United States

The United States is noted the world over for the remarkable achievements of the air mail ever since its inception at the close of the world war. Since 1922 the miles flown per crew fatality are greater than those flown by England or France. This is the only personal safety comparison possible because, until 1926, the air mail did not carry passengers.

It also had a remarkable record of reliability. A two-year comparison of scheduled trips completed on time on the New York to Chicago Air Mail service, and with the number of trains in New York State arriving on time at division terminals during 1910–20 inclusive, gives interesting proof of this reliability. Based on a ground speed of 70 miles per hour, the mail planes show "on time" averages ranging from 73 per cent in winter to 97.8 per cent in summer during a two year period. Passenger trains operating on a schedule *half as fast* show averages ranging from 75.3 per cent to 85.3 per cent. Another interesting comparison of reliability is the following: "The U. S. Air Mail for the three calendar years 1922–24, inclusive, transported 159,843,096 letters, of which only 125 lbs., or approximately 5,000 letters were lost or destroyed. This number is about half the percentage of losses of registered packages transported by U. S. railroads.[9]

The air mail has been supported by annual credits granted to the Post Office Department by Congress. These credits for 1925 were approximately $2,750,000. The expenditures for 1925 were $2,743,750.81, while the receipts from postage were only $602,627.54. This shows the air mail to be far from a self-supporting basis, especially when it is remembered that a number of operating costs are not included in the Post Office statement which a commercial company would have to make due allowance for—namely, expenses involved in soliciting traffic, legal expenses, depreciation, insurance and so forth. The fact that the air mail has suspended services started in various parts of the country because of their apparent inability to ever become self-supporting indicates, however, that an earnest attempt has been and is being made to put the service on as sound an economic basis as possible. While the night service has been particularly costly from the standpoint of lighting equipment, extra pilotage pay, etc., it has been felt that this service supplies a fundamental need and will do a great deal toward putting the air mail on a paying basis.

U. S.-Private Carriage of Air Mail

On February 2, 1925, the Kelly Bill was passed by Congress authorizing the carriage of mail by private enterprise at rates of postage of not less than ten cents per ounce. Under its term the Postmaster General may also contract for the forwarding by aircraft of first-class mail other than air mail. In either case the contract price cannot exceed four-fifths of the revenues derived from the mail so transported. It also authorizes the Post Office Department to contract for the private operation of existing routes and to establish additional routes.

Another bill was passed in 1926 establishing an assistant secretary of commerce in charge of aviation. His duties will be generally to provide:

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[9] Department of Commerce and A. E. C, Joint Report on *Civil Aviation*, p 64.

1. Aids to commerce, such as beacons, weather information and maps or route cards.
2. Certification of planes, licensing of pilots and establishment of routes.
3. Fostering of air commerce, mainly by making transportation safer and by making fullest and wisest use of present equipment.

It will be noticed that all of the aid authorized in the above two laws is indirect and looks toward practical self-supporting operation. Largely as a result of the passage of these two bills the following are some of the lines that have been organized and are operating regular services in the United States:

1. Boston-New York (Colonial Air Transport), 220 miles, begun July 1, 1926, 6 days a week, except holidays.
2. Chicago-St. Louis (Robertson Aircraft Corp.), 277 miles, begun April 15, 1926, 5 days a week, except holidays and day following.
3. Chicago-Dallas (National Air Transport), 995 miles, begun May 12, 1926, daily.

*4. Salt Lake City-Los Angeles (Western Air Express), 589 miles, begun April 17, 1926, daily.

5. Pasco-Elko (Walter T. Varney), 424 miles, begun April 6, 1926, 6 days a week.
6. Detroit-Cleveland (Ford Motor Co.), 91 miles, begun February 15, 1926, 6 days a week, except holidays.
7. Detroit-Chicago (Ford Motor Co.), 278 miles, begun February 15, 1926, 6 days a week, except holidays.

*8. Seattle-Los Angeles (Pacific Air Transport), 1,073 miles, begun September, 15, 1926, 6 days a week.

9. Chicago-Twin Cities (Northwest Airways), 384 miles, begun June 7, 1926, 5 days a week, except holidays and day following.

*10. Atlanta-Jacksonville-Miami (Florida Airways), 740 miles, begun April 1 between Jacksonville and Miami (393 miles), and September 15, 1926, between Jacksonville and Atlanta (347 miles), six days a week.

11. Cleveland-Pittsburgh (Clifford Ball), 115 miles, to start April 21, 1927.

*12. Cheyenne-Pueblo (Colorado Airways), 200 miles, begun May 31, 1926, daily.

13. Seattle-Victoria (Edward Hubbard), 78 miles, foreign air mail route operating 20 days a month, begun October 15, 1920.
14. New Orleans-Pilottown (Arthur E. Cambas), 80 miles, foreign air mail route operating 20 days a month, begun 1922.
15. Cleveland-Louisville (Kaess Aircraft Corp.), 342 miles, not started in 1926.
16. Detroit-Grand Rapids (Stout Air Services), 140 miles, begun August 2, 1926, every other day; beginning October 1, 1926, six days per week.

*Philadelphia-Washington (Philadelphia Rapid Transit), 107 miles, started July 6, 1926; discontinued November 30, 1926, daily.

*Philadelphia-Washington-Norfolk (Philadelphia-Rapid Transit, 234 miles, started Sept. 13, 1926; discontinued Nov. 30, 1926), daily.

17. New York-Atlanta, 744 miles (Pitcairn Aviation).

These services are all too new to be able to make any examination of their soundness. Their contracts are all separate agreements with the Post Office Department limited only by the terms of the Air Mail Contract Law outlined above. The operators are allowed to carry express cargo and passengers and a reasonable amount of both of these will doubtless be necessary to insure their financial success. This is indicated by the fact that one operator sought government release from his contract shortly after making it. He said that one day's air mail from St. Paul, Minneapolis, bore $8

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* Only lines carrying passengers.

worth of postage, of which he received 48 per cent.

From 1921–24 the Aeromarine Airways, Inc., operated three scheduled passenger services: one connected Key West and Havana, and another Miami and Nassau during the winter; the third service operated during the summer between Detroit and Cleveland. Evidently the line did not pay because none of the services are in operation at the present time. There are a couple of short services on the west coast catering mainly to passengers and supposedly meeting expenses, but it is felt that the air mail contract system is the first real step toward the firm establishment of air transportation service on a commercially successful scale.

U. S.-Industrial Uses

The United States is probably foremost, however, in the use of airplanes for industrial purposes. Air cotton dusting for the boll weevil has proved cheaper and more effective than ground dusting. It has already effected a net saving of many thousands of dollars and it is estimated that this work could result in a maximum net saving of $135,000,000. The U. S. Bureau of Entomology is extending the use of the airplane to the fighting of other plant pests also. The United States Topographical Survey has plans to cover most of its field work by means of aerial photography. "It is estimated that the gross sales of three of the most active airplane photographic companies in this country amounted to $1,000,000 in 1925. Forestry patrol, fire fighting, and crop estimation work have all used planes extensively during these developmental years.

The step taken by the United States that will doubtless be one of the greatest long-run, sound influences was the establishment of the National Advisory Committee for Aeronautics by an act of Congress on March 3, 1915. While its primary function is to advise and investigate for the air services of the Army and Navy, it is authorized to furnish information, or conduct scientific or technical research for any individual in the United States, provided such individual defrays the actual cost involved. The committee keeps itself advised of research progress in other countries and releases this information to university laboratories and aircraft manufacturers. Its development has been similar to that of any other scientific body, slow, but this makes one feel that its progressive effect is assured.

Colombia and Australia

There is little information available about the Colombia and Australia projects, beyond the statistics already discussed. It will be remembered that the former is a non-subsidized service operated by German interests. It seems to be satisfying a vital transportation need which probably explains its self sufficiency.

The Australian lines are developed by private companies with subsidies from the Australian Government. Further extensions are planned and the subsidy expenditures are probably justified on the grounds that the various services promote the welfare and safety of the important mining communities and bridge over areas difficult to cross by ordinary means of transportation.

SOME INDICATIONS OF FUTURE POSSIBILITIES AND CONCLUSIONS

After an extensive trip over European airways a scientifically trained investigator made the following observation in 1925: "The operation of air transportation shows everywhere an encouraging increase in regularity and safety, a growth in traffic and a decrease in unit operating costs. It is increasingly evident that the limits in regularity, safety, traffic volume and decreased costs have nowhere been reached and the curve of improvement is steeply upward." Another disinterested investigator confirmed these generalizations after a 21,000 mile trip during the first part of 1926.

It will be noticed that the points mentioned above are those that have already been discussed as some of the most crucial determinants of sound economic progress. The picture of what the future holds in store certainly seems bright. But there is one seed of decay that is still present and whose elimination must be continually attempted if the future development is to be increasingly more sound. Most of the present foundation has been built on subsidy. One needs but to recall that the French railroads and steamships have been subsidized for the fifty odd years of their existence, to realize that such paternalism practically always breeds comparative weakness. The railroads of many of the other countries of the world have long been self-sufficient. In these days of gigantic enterprises and large capital investment direct government aid usually seems the easier initial course. But large industries are continually being started by private enterprise and they are usually the better for it.

It is significant that not one active or potential operator of all those questioned during a recent extensive investigation in the United States desired direct subsidy. This portends well for the future of aircraft transportation in this country. If enterprisers are so convinced of the sound possibilities of a given venture that they are unanimously willing to assume all of the risk, there seems to be little question that they will overcome any temporary difficulties involved in economic operation.

It is not strictly true that they are willing to assume all risk. General navigation facilities involve too heavy an expenditure to ask them to make. It is interesting to conjecture on the degree of ocean transportation intercourse we would enjoy at the present time if the various governments had not long ago taken it upon themselves to make the seas as safe as possible. And we must always remember that economic progress requires specialization which in turn requires widening of markets. Man has always been relatively quick to intensively exploit any tools which will improve his economic status.

That aircraft transportation seems to be no exception to man's self-interest prosecution activity is borne out by many facts. Business men are everywhere taking an increased interest in air transportation. Many cities throughout the world have established and are establishing conveniently located municipal airports. Technical schools in the great universities are offering complete courses in aerodynamics and aeronautical engineering. Endowments have been created for the continuous study of economic as well as the mechanical aspects of the problems of aircraft transportation. Public governing bodies have been, after years of stirring, finally roused to the passage of economically sound legislation. International bodies have made some beginnings in bringing to an end the jealous, wasteful strife over air services between various nations. Much has still to be done on this score and much will remain undone as long as civil and military aviation have so much in common. The greatest international progress will be realized when the two are as distantly separated as possible.

In the light of the foregoing observations one cannot help but be optimistic about the future in those localities that realize the net burden of subsidy. Those who magnify the accidents and failures are similar to those who, less than a generation ago, predicted that the automobile would always remain a plaything. Those who count on unbridled optimism creating an immediately paying investment fail to realize the complexities of economic life in general. They forget that it must move more or less as a unit, that more costly transportation schemes must prove their power to add greater net value to the objects transported before their demands on our slowly increasing, usually busy fund of capital will be willingly met.

Air Transportation

By Anthony H. G. Fokker
Atlantic Aircraft Corporation

SIX months have seen a general change of mind with regard to aviation among the bankers, transportation people and business men of America. Of the possibilities of air transport and its vast ultimate utility no doubt now exists. Even the elderly, who personally hesitate at going up in planes, are convinced of their safety and necessity, and the younger generation adopts air transportation with enthusiasm, or more significantly, as a matter of course.

In War

This general change of attitude has had its effect upon America's valuation of aviation for national defense, but, speaking generally, the nation still does not fully comprehend the part which aircraft inevitably will play in future wars. This seems, indeed, to be grasped very slowly here. But understanding of course will come. The actual American demonstration of the fact, that battleships cannot resist and must sink under aerial bomb attacks, was as significant and dramatic as could have been the first startling achievements of projectiles propelled by exploding gunpowder in the first cannon. To the understanding mind that aerial demonstration was proof positive that in future warfare artillery will not play the dominating rôle, as it has in the past.

After gunpowder supplanted slings and catapults each new war effort showed great changes in the manner of its use, as for instance, the tiny cannon of the American Revolution as compared to the ordinance of the American Civil War. Evolution in the growth of destructive power during that period was startling, but the contrast between the heaviest Civil War period artillery and that of the World War was still greater.

Changes in aircraft will be as notable, and, because all life and effort have been speeded up, will be more rapid. Aviation with its present equipment can be regarded as only in the first stage of a technical development certain to be tremendous. The combination of aviation with modern chemical warfare, including the use of poisonous gases, indicates that in the next war not only the Army but (and chiefly) civilian populations of cities will be almost instantly affected by the first terrific destructive effort of the war.

This is realized in America by very few outside the ranks of experts, although some civilian populations of Europe (surely those of England and Germany), having had a taste of the horror of air warfare, are not deluded by the thought that safety lies in distance from "the front."

It may be possible that this combination of aviation and chemistry will prevent further wars after its effect has once been really demonstrated. If the war to end all wars ever comes it will be a war of aerial development.

I observed European aviation very closely during the war, because, naturally, my native country, Holland, was in a very difficult and even perilous position from the day of the Declaration until that of the Armistice. I am now, and quite as naturally, deeply interested in American aviation, for I have become a citizen of this great country. My wife is a Canadian.

It is here that all our future lies. We are intensely anxious to see the United States of America lead the world in peace-time aviation and to know the nation to be safely equipped with flying craft and expertly trained men in all military branches, so that in the event of war a competent and unbeatable defense will be absolutely certain. To a very great extent the military aviation of a future war will be dependant on the commercial air development of the nations involved.

THE U. S. AND EUROPE COMPARED

In spite of the splendid American Air Mail this nation lags far behind Europe in general commercial air development. Passenger-carrying equipment and organization virtually does not exist in the United States, whereas in Europe it has become one of the most important of modern activities.

I believe this lack of passenger-carrying facilities to be a serious handicap upon American business, and in many other ways a noteworthy strategical mistake.

If passengers could fly in the United States they would. That is proved conclusively by the fact that forty-eight per cent of the passengers who have been carried during the last year from Croyden, in England, to Paris, France, have been Americans. In Europe Americans eagerly seize the opportunities denied them in their own country.

Another proof that Americans are as anxious as anyone to fly, is that during the Sesqui Centennial Exposition in Philadelphia, while a passenger-carrying airline between Philadelphia and Washington was in operation, the large three-engine Fokker planes which flew the route twice daily were filled to capacity nearly every day and an average of 300 seats were booked in advance. Their capacity was small, only 8 passengers, but in four months they carried 3600 people—all that they could crowd aboard.

THE FUTURE

All except very short distance, high class, passenger travel will be by air in days to come. Transocean travel will be by fast aircraft almost exclusively. I am now building the plane in which Byrd is to attempt the transatlantic flight. It will be a good plane and, I think, not only with safety, but with unexampled speed, will carry him over the great stretch of waters which air transport will reduce truly to the proportions of a mere lake. In other words a few years will find transatlantic flight a matter of course. The Byrd flight will be a non-stop journey, by no means necessary, but calculated to advertise the safety of such travel most effectively. Probably the early passenger routes will be differently arranged.

That first attempts will all be non-stop is as it should be. This will attract wide attention as sporting propositions. Later organized effort will arrange for two stops to the New York-London and New York-Paris trips, the first of these in Ireland and the second in Newfoundland. Thus the journey will mean only fifteen hours above the water, estimating speed at one hundred miles an hour, a very moderate rate.

Technically nothing impossible or even especially difficult is involved in this non-stop flight. Planes already have been built that could have done it and that did do work as notable, and later established a 37-hour world endurance record. Macready and Kelly, for example, made a non-stop transcontinental Atlantic to Pacific flight in twenty-six hours and fifty minutes. The non-stop flight from New York to Paris would be but eight hundred miles longer.

The non-stop Paris to Djask, Persia flight, made last October by two Frenchmen, Rignot and Costes, was 3313 miles, or a fraction longer than the proposed Paris-New York non-stop flight.

PROGRESS IN AIR-MINDEDNESS

This summer should and will see a tremendous development of commercial aviation everywhere except in the United States, so strangely backward in this matter, and will show some development here.

Even the last six months has shown an increase in progressive air-mindedness among American business men in this regard, probably due to the great and spectacular success of the American Air Mail. A year ago a meeting of American businessmen asked to consider the financial wisdom of putting money into commercial aviation would have been scorned. Now money is available for every new and reasonably planned enterprise of this sort.

The ease with which people in this country now can be induced to try a flight in a plane is an amazing change over conditions which existed even twelve short months ago. Not only youngsters but the mature and even elderly are now eager to go up under any reasonably expert auspices.

Not long ago one of the great business organizations of Detroit (Continental Motors) bought one of my new three-motor planes. In it Mr. Judson, the president of the corporation, and Mr. Angell, its vice-president, flew from Detroit to the west coast by the southern route and back by the northern.

That was a try-out for the heads of the concern. It was so successful that this machine is now being used constantly in their organization, and soon Continental Motors will be steadily in the air as a matter of business efficiency. There are many other instances of this sort. Every large corporation, which covers great areas in its operations, is considering the advisability of aerial travel for its important officials as a time and, therefore, money-saving proposition.

COSTS

All the influences which have made such developments a little difficult in the past, and still handicap them, seem to be vanishing. For instance the cost of airplanes is high now. A three-engine machine can be sold for $40,000, each engine costing $5000 if it is to develop 200 horse power.

But note the difference between cost of retail manufacture and cost of quantity manufacture. These engines, built by quantity production methods, ought not to cost more than $200 each. Thus great is the margin between experiment and going concern. In quantity production, twenty-five of these engines can be built for the present cost of one. We have done these things in motor car manufacture. When we do them in airplane manufacture we shall have planes in the air.

DEVELOPMENT A MATTER OF COURSE

It is curious that while here we seem to be doing nothing, in Germany and France the development of air transport is as much a matter of course, as normal a business interest, as railway development was in the days of its beginnings. Berlin is a vast airport. Paris is a vast airport. London is a vast airport. In London a subway soon will be running directly from the center of the great metropolis to the landing field. This is not a madman's dream. Work has been begun upon this subway and is being rapidly pressed toward completion.

Why are we doing so little in America?

In Philadelphia, after the success of the Philadelphia-Washington Sesqui Centennial experiment, which I have mentioned, the Philadelphia Rapid Transit people expressed willingness to put ten million dollars into the establishment of a regular line, but could not get the necessary government guarantee of business.

The present cost of airplanes is high because thought concerning new types and improvements of old ones advances rapidly. It would be folly to say that this stage of airplane development has come to an end here or anywhere, but its influence will be constantly less as time progresses.

We already have established really efficient engine types, worthy to be put into quantity manufacture.

QUANTITY PRODUCTION

The whole engine development, which has resulted in the present advanced and admirable type, has occurred under the eye of the government and has been costly. But it must be remembered that military engines perforce will always be developed without regard to cost, but with the idea of obtaining the highest efficiency possible, regardless of expense. It is to be understood that designs thus developed are unlikely ever to be put into quantity production.

We in the United States shall not get the ideal aero-engine until the big manufacturers of motor cars take up the task of engine development. They will not do this until they feel sure of enough orders to justify continuous quantity production. As soon as this is possible, without the danger of being influenced by government requirements, we shall have quantity, in other words cheap production of airplane engines. Commercial aviation does not need engines of the ultimate possible performing power, as military aviation does.

The reliable and comparatively cheap quantity-produced engines for commercial aviation in America will be constructed, among other things, for overhaul at the minimum number of man-hours, and with interchangeable parts cheap to replace. Once this is started the engine which at present costs $5000 will be sold for $1000, with this price dropping rapidly until the irreducible minimum of a very few hundred dollars is arrived at.

After we begin quantity manufacture on truly American lines, as we now produce automobile engines, European manufacturers, unless heavily subsidized by their governments, will find competition with us utterly impossible, and will have to buy of us. Europe is a retail region, full of inefficiencies.

One of the most successful European air-cooled engines is built in five factories, instead of in one as it should be, each factory in a different country, with the total production of the lot smaller than a big American automobile engine factory, and serving in all five countries of a total area smaller than that of one American State.

Nobody knows better than I that construction methods may be widely changed. The larger factories will standardize their types. It may be that the use of wood and fabric will eventually be superseded by metal, provided some durable method of preventing corrosion and checking the destructive influence of vibration can be devised.

At present the production of metal planes is far from cheap. The duralumin sheets must be bound together with thousands of hand-made rivets of a type not to be manufactured by machinery. This will need to be, and will be, substituted by other materials and methods of construction. Eventually all-metal planes will be cheaper than any other.

The all-metal plane now is financially impossible for any manufacturer except, possibly, Mr. Ford, who seems to be willing to donate forty or fifty thousand dollars to every customer. Every other all-metal manufacturer has had to be re-financed several times, or supported by government contracts at excessive prices.

The growing aircraft industry will develop different types as the automobile industry has done. We shall have planes for every purpose, from the smallest two-seater or single messenger-plane up to the 100 passenger transport airliner, fitted with every possible comfort for its passengers.

As these things come about the cost of air transport will drop. If the cost of airplanes is one-tenth or less of what it is today, and if planes are adapted to the use of a fuel cheaper than that which at present they must burn, as is promised by our never-resting chemical industry, air travel may be cheaper than the present railway rates, while, at the same time, offering such superior speed and comfort that there will be no comparison on that score between the two modes of progression

FAST PLANE TRAVEL AND SLOW TRAIN TRAVEL

Air transport will dominate the country, the railways being kept busy with mass-transport of passengers and freight. I do not believe that any single railway official in the United States today realizes the influence which the development of air transport is bound to have on all de luxe passenger transportation.

Railway experts, like the general public in America, have failed to understand the improvements in sight, or already actually realized in air transport methods. We Americans who have travelled by air abroad (and thousands of Americans will be doing so this summer) know the superiority of the plane over every other vehicle, especially for night travel. There is no comparison between the smooth delight of the aircraft cabin bed and the rocking, ever shifting couch of a night traveller by railway train in the very best Pullman cars over the most perfect roadbed.

The airplane is at present noisy, but it is certain that this noisiness will be very greatly reduced, and the monotonous noise of a plane encourages sleep and is not tiresome.

The cost of equipping airways is infinitesimal by comparison with that of building railways and establishing their terminals. Even though the most perfect lighting and radio-direction systems be installed this will always remain the case. Where railways have to cross rivers or mountains vast expenditure must be involved. A river or a mountain chain adds not a penny to the first or any other cost of air transport. Railway rights of way through crowded cities are inconceivably costly. Air travel needs no such rights of way. And the multiplication of speed will lengthen the traveller's life by just the number of days, hours and minutes that fast plane travel saves over slow train travel.

AIR TRAVEL WILL SUPPLEMENT RAILWAY TRAVEL

As has been learned in Europe, however, air travel will not compete with, but will supplement railway travel. The railways should be first to take up and encourage the establishment of airlines. If they have the wisdom to do this they will have absolutely nothing to fear, but, on the other hand, will prepare for a new source of profit. At first they tried to deny the efficiency of long-haul motor vehicles, until soon they found the truck cutting in upon their freight business and the busses reducing their suburban passenger haulage. Then, in many regions, they did the sensible thing—they went into the trucking and bus businesses themselves. Now they are making more money than ever.

Exactly similar should, and will, be chapters in the story of the railways and air travel.

The effect of air travel upon many things will be magical in the United States. For example it will immensely increase the commuting distance of the businessman. Imagine the effect which it will have upon the real estate value of islands.

We are but a step or two away from such a development of air travel as will be epochal in the nation's history. Really it principally waits for the perfection of air terminals in all cities. With regard to this a very encouraging picture has been presented during the past year. The completion and enlargement of air terminals will have the same effect on air travel and the plane industry as the building of good roads had on motor travel and the automobile industry.

The time is close at hand when each city will not only have its landing field, but will be encircled by a belt of landing fields, each connected by good transport with the town's center. Few cities already grown to any considerable size can arrange landing fields within their inner boundaries, and it is probable that if any did so they soon would find such fields so congested that they would perforce have to be transferred to the outskirts.

It is astonishing that the vast city of New York has actually not a single landing field.

When travel by airplane is organized here it will offer American sightseers such opportunities of inspecting the United States as they never have dreamed of. And imagine the comforts of their travel, with surface difficulties entirely negligible!

Air travel will not have been under way here very long before every city and town will realize that it must be reckoned with in town-planning.

ADVANTAGES NOT YET REALIZED

Many advantages of air transport are not yet at all realized by the general public. Not only does it need no roadbed but it can be operated from and over land or water, ice or snow. No degree of heat or cold affects it.

The time now has come when these and many other things must be laid before, and carefully considered by, the American public unless this great nation is to be left far behind by its competitors in the great race of progress. Transport is the most important detail of the processes of civilization. Air transport long since has passed the experimental stage. There can be no further doubt about its safety, comfort, and superior speed.

Its development only needs such organization here as will come automatically through the investment of capital by those who have earned that capital through their own hard effort. Such capital is far more valuable than any other.

There can be no further doubt about the safety, comfort, superior speed, and its dominating influence on transportation and warfare.

But all will be surmounted. The airplane is especially adapted to surmount all obstacles.

Book Department

WILLIAMS, JUDITH BLOW, PH.D. *A Guide to the Printed Materials for English Social and Economic History, 1750–1850.* 2 Vols. Pp. Vol. I, xix, 535; Vol. II, 653. New York: Columbia University Press, 1926.

This very excellent guide is the result of hard work, good judgment and sound critical scholarship. With this there is also combined a good understanding of the larger movements of English history for the century from 1750 to 1850. The importance of the period is generally recognized. It encompasses the Industrial Revolution, which according to the conception of the author forms the bridge, as it were, between "the relatively local and small scale life of earlier days, and the more intricate economic and social life of modern times."

The works are grouped in three divisions. The first relates to the Industrial Revolution as it is usually understood; the second to the expansion of England's possessions overseas, and the third, to the economic and social effects in England of the Napoleonic Wars.

The plan of the work is simple. Part I deals with works of general reference, classified under Bibliographies; Encyclopedias; Economic and Social Histories; Political Histories; Publications of the National Government; Local Records; Reports of Societies; Periodical Publications; Works of Travel; Local Histories and Biographies. Part II is devoted to special subjects as follows: Economic Theory, Economic Conditions, Industries, Social and Economic Conditions and Movements, Social and Political Theory and Movements. These are followed by a detailed index of authors and a well organized guide to subjects.

In order to secure a body of material with unity and coherence, yet representative of the period, the author used two principal themes as the basis for the sections and the organization of the sources. The first, to use the author's own words, relates to "population, prices, business, cycles and crises, commerce, money and banking, public finance, transportation, industry and technical developments affecting it;" the second to social relationships, that is "the conditions of life, especially among the working classes, wages, the poor, charity, co-operation, trade-unions, education and theories of social reform."

It is evident from the selection and classification of subject matter that the treatment is closely articulated to the simple and more general outlines of the history of the period, rather than to a preconceived and artificial bibliographical scheme. Publications of the same general type are grouped together. Bibliographies, official and periodical publications usually come first in each section, other works following in chronological order.

A noteworthy feature of the work is the effort at an appreciation of evaluation of the works in the form of brief notes and comments which are as a rule, penetrating and critical, and as the author tells us, based on actual handling and reading of the books themselves. As a result the estimates always command consideration, even though one may at times differ from the opinions expressed.

In the matter of selection the specialist will frequently experience unexpected surprises both in the works included and in those left out. For example, either through oversight or mistaken judgment, the very important work of "War in Disguise" (1805) by James Stephens, and its American reply entitled "An Answer to War in Disguise" do not appear; nor does "Dangers to the Country" written two years later. Similarly, Melvin's work on the Continental System, a scholarly work based upon extensive research escapes notice. It is particularly unfortunate because of the valuable bibliographical section of Melvin's study.

The reviewer appreciates the extraordinary difficulty of the author's task and by way of extenuation for omissions of this kind, it is only fair to quote the statement in the preface that the guide is "selective" and that "not more than one-third or one-fourth of the works examined have found a place in the work." The section on the "Publications of the National Government" will prove of special value to beginners.

The high standard set by these two volumes should be an earnest of the bibliography of English history for the larger field now in preparation by a group of scholars under the auspices of the two great Associations of Historians in England and this country.

In conclusion it is a pleasure to speak with unstinted praise of a work that reflects such sound scholarship. It is not only a valuable aid to historical students, but will prove a stimulating and helpful guide to researchers.

WILLIAM E. LINGELBACH.

HOAG, C. G., and HALLETT, G. H., JR. *Proportional Representation.* Pp. xx, 546. Price, $5.00. New York: The Macmillan Company, 1926.

For many years the standard classic on Proportional Representation, or P. R. as our authors prefer to call it, was John H. Humphreys' *Proportional Representation* (reviewed in *The Annals* of October, 1911). This was an authoritative book in which was analysed the results of English electoral methods; contrasted the working of the second ballot, the alternative vote and Proportional Representation; described the systems of election then obtaining in several Continental countries, in Tasmania and in South Africa; and discussed the effects of P. R. upon the party system and its bearing upon the relations between the two Houses of Parliament.

Humphreys' book must now yield its place to this new volume by the Honorary Secretary of the (American) Proportional Representation League (Mr. Hoag) and its Executive Secretary (Dr. Hallett) who have written an equally authoritative book, quite up to date and including the American experience of recent years which has been active and fairly extensive beginning with the adoption of P. R. in Ashtabula in 1915 and including elections on that basis in such representative cities as Cleveland and Cincinnati.

The chapter on "How P. R. Works" is indeed most illuminating and in many respects more effective than the one in which the authors deal with "Objections," as it is hard for zealous propagandists, and our authors are certainly such, to deal dispassionately with the arguments of opponents or the doubts of the thoughtful. The discussion of the objections is fair, but for the reasons noted is not forceful.

How P. R. has worked in hundreds of elections and places is told with adequate summaries of facts and references to sources. Full documentation is one of the admirable features of the book, nearly one half of which is given over to an Appendix which comes pretty close to being the most valuable part of the book. It contains a list of places and organizations using Proportional Representation; quotations from famous political theorists on the subject, the earliest treatise on it; a discussion of its constitutionality, a list of organizations promoting P. R., a discussion of the constitutionality of P. R. and of majority preferential voting and of election provisions for P. R. with the single transferable vote.

In the body of the book there is an explanation of voting systems that do not represent the will of the voter, a study of the two types of P. R. which have been widely adopted—the list system and the single transferable vote (the Hare system); their advantages and the objections to them, the history operation, and technical details. In short the book is designed, in the words of the authors to make it "of value to the people of the United States. The problems and experience of other countries have not been neglected, but their treatment has been subjected to the requirements of this purpose."

It is to be regretted that the index references are to sections rather than to pages as many of the sections cover a number of pages.

CLINTON ROGERS WOODRUFF.

OLSON, REUEL LESLIE, A.M., J.D., PH.D. *The Colorado River Compact.* Pp. xxiv, 527. Price, $8.00. Published by the author, Los Angeles, Calif., 1926.

The project of legislation discussed in this volume should occupy a distinct place in the constitutional history of the United

States. It remains a paper project. Five years have passed since the ambassadors of the seven states of the Colorado River Basin began their negotiations in Washington, more than four since they signed the compact at Santa Fé, but ratification by the legislatures of the states remains incomplete, and seems likely forever to remain so. Despite political and economic pressure from Washington, Arizona steadfastly withholds her consent for the very sufficient reason that she has much to lose and little to gain by giving it. The one great need which she was suffering with the other six states of the basin when the negotiations began was supplied before their conclusion by the Supreme Court of the United States —a certain and simple rule fixing the relative water rights in an interstate stream possessed by arid states each of which has abolished the water right of the riparian landowner and substituted the right of the prior formal appropriator. The decision in *Wyoming* vs. *Colorado*, 259 U. S. 419, setting up the same rule as to the conflicting claims of two states each of which has so legislated, was rendered June 5, 1922. It assured to Arizona—with the inducements to prompt development offered by her vast area of irrigable land and mild climate—the security of the titles of her appropriators who take while the taking is good, against attack by later comers to the high and colder valleys of the upper basin.

This great river of the Southwest, not inaptly called the American Nile, drains and waters parts of the states of Wyoming, Colorado, Utah, New Mexico, Arizona, Nevada and California. Rising at high altitudes on the western slope of the Rocky Mountains where the growing season is short and the frost risk high, it debouches upon the rich low, hot lands at the head of the Gulf of California where crops may be grown twelve months in the year. The Imperial Valley, 250 feet below the level of the Gulf, is the best known part of these lands. In the famous Canyon section alone it falls 3000 feet, in its whole course 8000 feet,—a vast potential source of water power. Like its African prototype, it suffers a regular annual flood from the melting snows of the Rocky Mountains, but with more disastrous results. Twenty years ago the entire river broke into the Imperial Valley and threatened it with complete destruction. After a desperate struggle the river was forced back to its channel; but the peril is ever present, and only flood control by gigantic storage works can adequately safeguard against it.

As if nature and conflicting state jurisdiction were not enough, the river presents international problems of the gravest character. Vast areas of rich Mexican lands about the head of the Gulf are held by American speculators. The Imperial Valley is watered by a canal which takes water from the river in the United States, carries it many miles through Mexico and back again into the United States. The part of the canal in Mexico is owned and operated by a subsidiary corporation incorporated in Mexico and obliged by its charter to furnish on demand as much water for lands in Mexico as for lands in the United States, an obligation which has never been fulfilled. For the protection of the Imperial Valley the United States has built and maintains a levee in Mexico. Finally, the storage of the annual flood, at the expense of the United States or of its citizens, would greatly increase the amount of water available for irrigation and would therefore increase the acreage irrigable from the river; and if the point of storage were as far down stream as Boulder Canyon, much of the water could be used only in Mexico. Many persons in the Southwest fear the establishment of a large Japanese colony in Mexican soil with a Japanese city at the head of the Gulf. Storage at the head of the Canyon section of the river would avoid these evil consequences and vastly increase the potential water-power development, but the feasibility of diverting the water there stored to lands in Arizona and California is in dispute.

The author is a professor of law in the University of Southern California at Los Angeles. His book is a Harvard doctor's thesis and is extensively documented. After a brief introduction he analyzes the compact and discusses at much length in separate chapters its engineering and economic background, and the constitutional and political issues involved in it.

The compact, unlike the pending Delaware River compact, merely sets up rules of law for apportioning the water of the river, without establishing any administrative agency to apply them. In his concluding chapter the author finds this omission to be a fatal defect. Indeed he maintains that in time of scarcity "the prior appropriation system breaks down, and there must be a conscious control of the vesting of water rights in accordance with other principles. To the determination of these principles a Colorado River Authority might properly direct its attention. Their development is not the concern of anyone at the present time." But it is hard to see how Arizona could be induced to make so sweeping a delegation of its powers over the river and thus put at hazard a title made certain, as the state thinks, by the Supreme Court of the United States.

The reader will find this volume a useful abstract and compendium of the discussion that has raged about the compact rather than an authoritative judgment on the matters in issue. It is equipped with maps, a profile of the river, an airplane photograph of a section of the Canyon, a "Who's Who in Colorado River Development," bibliography and index.

PHILIP P. WELLS.

BERNARD, L. L. *An Introduction to Social Psychology.* Pp. x, 651. Price, $4.50. New York: Henry Holt and Company, 1926.

Social Psychology, as an academic subject, finds itself in a strange position. Everyone working in the social sciences is a social psychologist, whether he wishes to be or not. The economist may deny with great emphasis that he has any concern with social psychology, yet certain notions as to what human beings will do under certain circumstances is basic to all his thinking. Human motivation in stated social circumstances is the foundation for his whole structure of economic theory. And what is true of the economist is true of the political scientist, the sociologist and anyone else, whether "theorist" or "practical man" whose work requires an analysis of social situations.

How then is one to explain the low repute in which social psychology is generally held in academic circles? The explanation lies partly in the mass of controversial literature in this field, with its exaggeration and vituperation; partly in the enormous amount of pure rot and nonsense that has been offered to the reading public as social psychology; partly in the mistaken claim put forward that the whole domain of social psychology belongs exclusively to the psychologist, and that trespassers will be prosecuted. For many the controversy has been confusing, the nonsense disgusting, and the claims of certain individual psychologists consoling. For, if social psychology is a specialism in another field, then one need not bother one's head about it.

Two noteworthy volumes in social psychology have appeared in recent years, one by Allport and the other by Bernard. The former volume is written by a psychologist and is especially strong in its analysis of the individual personality and is weakest in its analysis of the social process. The latter is written by a sociologist who has devoted twenty years primarily to the analysis of social situations from the psychological viewpoint. Hence Bernard's volume is strongest in its analysis of human motivation in the social process.

Bernard is not easy reading; his mind is rigorously logical and abstract, and once a bit of ground has been covered he does not dally by the wayside with long illustrations or make excursions into interesting bypaths but proceeds immediately to the exploration of new territory on his general line of march. However, the reader is more than repaid for his difficult reading by the penetrating analysis of social processes. Moreover, an enormous amount of ground is covered. If Bernard's style is abstract it also flows smoothly and is perfectly clear and gives every evidence of a vigorous mind behind it.

Bernard's approach is the synthetic one. He is not interested in controversy. In an earlier volume, *Instinct: A Study in Social Psychology*, he entered the controversial field and showed the folly of attempting to explain human motivation in terms of a few well-defined instincts. His present purpose is to present the authentic material. He has been notably fair in giving the contributions of those with whom he disagrees. It is evident that the writer feels strongly the desirability of clearing up the confusion existing in many minds as a result of all the controversy. In order to do this he plans to cover the field completely in two sizable volumes, of which the one under review is the first to come from the press. In the second volume Bernard will deal with the development of personality and the self and social consciousness.

The present volume is divided into three main sections: The Foundations of Collective Behavior; The Integration of Personality in the Psycho-Social Environment; The Psycho-Social Environment and the Organization of Collective Behavior. A fifty page introduction gives a broad setting for the material that follows and discusses the relation of social psychology to other academic pursuits. The general approach of this writer is quite different from the usual material to be found in this field. He does not discuss the "herd instinct," or some prepotent herding tendency, and then proceed to show how such *tendency* or *desire* or *wish* will work itself out in the life of the group. He believes the human animal is possessed of an extraordinarily adaptable organism and that the social process, within broad limits, selects the types of responses that will fit the pattern of life the group already has in operation.

A scholar once remarked, in delimiting his field of operations, that psychology was the study of the skin and what it contained. Bernard has reserved for another occasion his detailed subcutaneous explorations, or rather, he is more interested in what the world beyond the skin does to the world within the skin than vice versa. He has given us a scholarly and illuminating book and one that will doubtless receive increasing recognition as time passes.

HUGH CARTER.

THRASHER, FREDERIC M. *The Gang* Pp. xv, 571. Price, $3.00. Chicago University of Chicago Press, 1927.

This well-documented study of 1313 gangs of all age groups in Chicago analyzes the rôle played by the gang in the life of the adolescent boy, and in particular of the boy "who dwells among the shadows of the slums," where the poorer immigrant groups have settled. Here old and new standards have clashed. The process of adjustment has all too frequently meant a collapse of family life and parental authority, aided instead of prevented by a misdirected process of "Americanization." Here, "in the twilight zone of railroads and factories, deteriorating neighborhoods and shifting population," the gang flourishes. It is the product of a "geographically and socially interstitial area," a frontier phenomenon in the borderland between business and residential districts. To the adolescent boy in whom a new individuality is forming, moulded by strange and to him unknown forces, the gang furnishes an escape from an otherwise humdrum existence and a way of meeting needs which society fails to satisfy by constructive means. It becomes, therefore, a powerful influence in the formation of character. In some cases it aids the boy to become a good citizen. In most cases it demoralizes him. The chapters on the gang and its part in immorality, crime, and party politics testify to this.

The author suggests that the only way of making the gang a useful instrument of socialization is to provide its members with constructive interests without eliminating the thrill in the process. Occasionally this has been done successfully by the Y. M. C. A., the Boy Scouts, and the settlement houses.

Professor Thrasher has made a real contribution to sociological research. The wealth of material employed has been used with good judgment and presented in an entertaining as well as an instructive manner. It is unfortunate that the concept of the gang as an "interstitial" group has not been carefully and logically analyzed, particularly since it is regarded as the key to the situation.

The make-up of the book is attractive. Aside from a few omissions of references (for documents Nos. 68, 137, 159) and an incorrect footnote on page 62, it gives evidence of careful proof-reading. Some photographs, an excellent bibliography and a good index add to its usefulness. Those who come into intimate contact with the adolescent boy should read it. The gang

PROCTOR, ARTHUR W., and SCHUCK, ARTHUR A. *The Financing of Social Work.* Chicago: A. W. Shaw Company, 1926.

In view of the priority of space, interest, data and argument allotted in this volume to the discussion of the community chest movement, which has flourished so widely in the United States during the last decade, there is almost a touch of irony in the foreword contributed by Mortimer Schiff, distinguished philanthropist and banker, when he remarks: "The only point with which I am not fully in accord with the authors is in the emphasis which they place upon the community chest as a plan for the financing of social work and their optimism regarding its development."

The first half of the book is devoted to "underlying principles," a discussion that early eventuates in enthusiastic endorsement of the community chest. While the doubts and questionings expressed in the preface are acknowledged and dealt with, their treatment seems somewhat sketchy and lacking in both depth and breadth, as compared with the vigorous and authoritative presentation of the more obvious and generally considered aspects of the problem. At least, there still remains much room for more penetrating discussion of the principles and policies exemplified in the community chest movement, especially as it affects freedom of leadership, experimentation and minority opinion in dealing with social problems, as well as the problem of maintaining broadly democratic control of community planning and social service.

The second half of the volume, devoted to the technique of organizing and conducting solicitation of financial support for social work agencies, is a mine of valuable information and suggestions, drawn from a rich experience and a wide investigation. It is also refreshingly free from the "go-getter" spirit that may so easily overshadow the main social objectives that underlie such campaigns. The authors show a genuine appreciation of the deeper motives and values that justify and dignify the somewhat spectacular appeals of social work for financial support, and they are deeply interested in the educational and constructive aspects of these campaigns. At the same time they have practical realization of the necessity of building increasing participation and support upon the foundations of interest and understanding that already exist, however unsatisfactory or inadequate those may, for the moment, be.

There is an important phase of social work financing which the authors omitted from consideration, though it would appear to fall within the broad limits of the book's title. It is the relation of governmental to private financing. To those who believe, with this writer, that one of the pressing problems of the present and immediate future in social work is the establishment of right relations and of a sound division of labor and support between public and private agencies, the omission of any discussion of the problem will be a surprise and disappointment. The state and local subsidy system, the so-called "Columbus Plan" of poor relief by which the governmental agency furnished the funds and the private agency dispensed the service, the problems and principles of public supervision of private charitable funds—all these would seem to have a rather direct and important bearing upon the form of organization, the extent and method of solicitation of private contributions, and the accounting of such funds.

On the whole, however, this volume is a welcome and valuable addition to the library of any progressive administrator of a social work enterprise and of any public-spirited citizen who wishes his effort to count most effectively in the advancement of the social program of his community.

KENNETH L. M. PRAY.

ELLINGWOOD, ALBERT R., and COOMBS, WHITNEY. *The Government and Labor.* Pp. xv, 639. Chicago: A. W. Shaw Company, 1926.

This volume is a collection of illustrative material bearing upon the major problems which have grown out of the relations between the government and labor in the United States. It contains the more important statutes, judicial decisions, administrative orders and reports dealing with these problems. It is the conviction of the editors that "the process of learning" can be aided by the use of the inductive methods of the laboratory. They seek, therefore, in this compilation of original material, "to make it possible for the student to see the mill at work, to sample the grist that enters it and the meal that it produces."

The materials included are arranged under appropriate headings. The basis of governmental regulation, the labor contract, the protection of the laborer against competition, the labor union, the labor conflict, safety and health, hours of labor, wages, unemployment, workmen's compensation, and social insurance are the subjects which engage the attention of the editors. A large portion of the volume is virtually a case book on labor law, since some seventy federal and state judicial decisions are inserted In view of the important rôle the courts play in government regulation of labor in the United States, it is to be expected that any book of readings in this field must give extensive space to court decisions.

The editors have rendered an inestimable service to teachers and students in compiling this excellent collection. By a careful pruning and condensation of this official material they have made available relatively inaccessible primary sources. Occasionally the editors insert introductory and explanatory statements, although for the most part they allow the official documents to speak for themselves. An especially commendable feature of the text is the inclusion in each section of a list of questions related to the main theme of that section and its ramifications These questions are illuminating and suggestive, and add appreciably to the merit of the volume. The organization of the entire volume is well balanced. A little more attention might have been given to the decisions and more particularly the working methods of governmental administrative commissions vested with the administration of labor legislation.

It is the conviction of the editors that the student should not have access to the secondary and predigested matter on the subject of the government and labor until he has consulted the original materials. There is room here for an honest difference of opinion. Where the student is not under the guidance of competent instruction, this handicap could at least in part be overcome by the use of the secondary materials. Under any circumstances, it is the opinion of the reviewer that the omission by the editors of references to collateral sources impairs the utility of the volume and detracts somewhat from an otherwise exceptionally creditable compilation.

MARTIN L. FAUST.

SEABURY, WILLIAM MARSTON. *The Public and the Motion Picture Industry*. Pp. xiv, 340. Price, $2.50. New York: The Macmillan Company, 1926.

Mr. Seabury states in his preface that the purpose of *The Public and the Motion Picture* is "to initiate and to render articulate an international movement to fix and establish the status of the motion picture in every nation of the world as a new public utility and to require the industry, without diminishing the popularity of its entertainment, to consecrate its service to the cultivation and preservation of the world's peace and the moral, intellectual and cultural development of all people" (p. x). It is apparently his belief that this purpose can best be achieved through legislation, though he does give slight recognition to the basic economic facts and principles involved in such a fundamental reform.

The layman, unacquainted with the development and methods of the motion picture industry, may obtain from this work an elementary if somewhat biased description of the industry in the United States, Canada and the leading European countries. The Latin-American nations and the Orient are not considered of sufficient importance to merit mention. Mr. Seabury's descriptive analysis is limited by his desire to show the need for a corrective program centered on the present practical monopoly and its alleged attendant evils, which are said to be artistically, morally and economically disadvantageous to all concerned. While there is no doubt a large element of important truth in such a point of view, the facts and opinions cited do little more than establish the serious handicap of those individuals and nations so unfortunate as to be left out of the inner controlling circle. The views and contributions of the "monopolists" who aided so materially in bringing the industry to its present position should have fair consideration in any calm discussion of the growth difficulties of our industrial infant.

Eighteen specific and a number of general legislative reform measures are suggested, including such proposals as the "declaration of the status of the motion picture as a new public utility" (p. 290), the separation of the functions of production and distribution from that of exhibition (p. 294), the "prohibition of monthly consumption of twenty-five per cent or more of the screen time of any theatre by any producer or distributor of pictures" (p. 297), the "prohibition of any undue or unreasonable increase in the rental of films or the license fees for the exhibition of pictures and the prohibition of any undue or unreasonable increase in admission charges" (p. 303), and the elimination of "block booking," "black lists," quantity rental discounts on unfair terms, and obscene and socially undesirable pictures. Federal control, but not censorship, is advocated in order that the annoyances of various state acts and taxes may be avoided. Similar legislation is recommended to European governments, with the additional recommendation that private international trade alliances would be helpful. Mr. Seabury has evidently given much thought to the legal problems involved, but a great amount of economic and social research is required before his ideas can safely be refuted or accepted.

Donald Young.

Dice, C. A. *The Stock Market.* Pp. xiv, 667. Chicago: A. W. Shaw Company, 1926.

The stock market, how it operates and how to operate it, has been a popular theme among writers for many years. The mass of material contributed has, however, related mainly (1) to a social justification or condemnation of speculation or (2) to "inside" methods on how to beat the market, and in most instances has been partisan in character. Outstanding exceptions have been: Emery, *Organized Speculation on the Stock and Produce Exchanges of the United States;* Brace, *The Value of Organized Speculation;* Huebner, *The Stock Market;* and Meeker, *The Work of the Stock Exchange.* Professor Dice in *The Stock Market* has added another important exception.

This book accomplishes two things. It gives a detailed description of the organization and technique of stock exchanges and trading. Secondly, it outlines and weighs the relative merits of those factors which one must take into account in order to intelligently speculate in stocks. The descriptive portions include chapters on the growth and organization of stock exchanges, on the nature of stocks, on dealers and brokers of stocks and their work and special chapters on rights, convertibles, puts and calls, and other special phases of stock market organization.

The chapters devoted mainly to developing the factors of intelligent speculation include: "Purchasing on Margin," "The Stop-Loss Order and the Hedge," "Tape Reading and Chart Trading," "Averaging and Pyramiding," "The Technical Position of the Market," "Stock Price Averages," "The Dow Theory," "The Money Market in Relation to the Stock Market," "Forecasting the Major Trends," "Methods of Rating Securities," and "Analysis of Securities."

The author has interwoven the descriptive portions of his work with the analytical. This has apparently been done to make the material more interesting for the general reader. A free use of stock market terminology has also been included for the same reason. These characteristics will doubtless please the tired business man who desires to learn something about the market in which he occasionally places some surplus earnings, but to the careful student or teacher a greater degree of exactness in presentation both from paragraph to paragraph and from chapter to chapter is to be desired. Doubtless to avoid the commonplace, also, the author has devoted a minimum amount of space to the economics of the stock market and to the legal phases of the subject, and in their place has substituted rather frequent references from the *Wall Street Journal.* This will doubtless appeal to the chart trader but decreases the value of the book as a general text.

G. WRIGHT HOFFMAN.

SCHOLZ, K. W. H., and PATTERSON, S. H. *Economic Problems of Modern Life.* Pp. xii, 615. Price, $4.00. New York: McGraw Hill Company, 1927.

Until recently most books on economics treated entirely too exclusively the old orthodox concepts of the laws of economics. This method naturally allowed of too little attention to the current problems of man in his economic activities. Many of the texts seem to be written primarily for the commendation of the author's contemporaries at the sacrifice of the immature or new student of the subject or of the layman on the street. Too many of the theorists have shown either a woeful lack of knowledge of the possibility or impossibility of the application of their theories, or have failed to appreciate this point.

S. H. Patterson and K. W. H. Scholz in *Economic Problems of Modern Life* have made a very definite and worth-while contribution to the field of economics. They have presented in a concrete, tangible, and at the same time teachable form, our current economic problems.

Experience in teaching such courses as money and banking, finance, merchandising, etc., etc., to upperclassmen leads one to doubt the value the student receives in the prerequisite course in the traditional, abstract, theoretical elementary course in "Principles." Featured as an exercise in mental gymnastics, or as a class-room or living-room discussion this method of treatment doubtless has some interest and benefit for a few. To the majority of undergraduates, however, it neither prepares for future academic work, nor for life.

Economic Problems of Modern Life senses this situation and fills a large gap. The authors have very properly avoided stressing the purely price concept of economics, and stress the importance of man as the chief factor in economic life.

The book is exceedingly extensive as well as intensive. The average college student studying economics for the first time, and using this text only, would be lost in the maze of facts.

A better balance and coherence would be attained by making Parts 3 and 4, Parts 2 and 3, and by placing the present Part 2 (Trusts, etc.) as Part 4. The monetary and financial discussion of Chapters 11 to 21 inclusive should follow Chapter 5. At the same time the problems of monopoly should be more closely connected with the problems of labor and in ustrial unrest.

HORACE R. BARNES.

DAY, EDMUND. *Statistical Analysis.* Pp. xxvii, 459. New York: The Macmillan Company, 1925.

Some indication of the growing interest in statistical procedure is afforded by the constantly increasing volume of textbooks of statistics that come from the publishers. Professor Day, who is dean of the School of Business Administration of the University of Michigan, has given us a volume noteworthy in several respects. He has been convinced that the weak point in most statistical research lies not in the inability to use the various techniques of procedure but in failure to grasp the logic of statistical analysis. Therefore his book is carefully designed to give the student not only a thoroughgoing training in the elementary techniques but also in the much needed orientation in the general limitations and uses of quantitative analysis. Day indicates that there has been too wide a separation of graphic methods of presentation and the material to be presented, in most textbooks. He has explained graphics wherever the subject arose. The book is loaded with charts and graphs and these add greatly to the interest of the student as he makes his way along the painful path to statistical knowledge.

The mechanical make-up of the book is pleasing. The heavy gloss paper is durably and flexibly bound and the typography clear. There is a brief index and bibliography. Several appendices of handy information for the student include: Table of Logarithms, Table of Squares, etc. (1-1000), Relationship between r and rho.

HUGH CARTER.

SLOAN, L. H. *Security Speculation.* Pp. 280. Price, $3.50. New York: Harper and Brothers, 1926.

Mr. Sloan, who is associated with the Standard Statistics Company, Inc., of New York, presents in this book a statistical study of the relative merits of three methods of speculation. Eighteen representative common and fourteen preferred stocks are used and tested over the twelve-year period January 1, 1914, to January 1, 1926.

Under the first method (Test I) the imaginary speculator places a fixed amount of money in stocks on the first of January each year and on January 1, 1926, sells out his holdings. His total profit is then calculated, which includes both dividends and capital gains or losses, and reduced to an annual average percentage gain or loss. Under the second method (Test II) the speculator follows the long-pull idea and invests a fixed sum at the beginning of the eleven-year period and sells at the end of the period, his profit as above being reduced to a percentage basis.

Under the third method (Test III) the speculator, observing the fact that stock prices are subject to large cyclical swings, attempts to so time his purchases and sales that he may benefit from each of the upward movements. In this he is successful enough to catch approximately two-thirds of each upward swing. During the downward movement, he puts his money in the bank and with the next upward swing reinvests his enlarged capital fund, selling out finally on January 1, 1926, his total profit being reduced as above to a percentage basis.

Mr. Sloan concludes that the last of the above three methods offers greater possibilities for profit than the first two methods because definite account is taken of cyclical stock price movements. The time of purchase and sale is the essence of the problem. "It is the exceptional security which returns an adequate profit if it is bought at the wrong time; likewise, it is the exceptional security that fails to return an adequate profit if it is bought at the right time" (p. 133).

Three points in criticism of Mr. Sloan's methods should be mentioned. He has chosen a period of time—January 1, 1914–January 1, 1926—which begins with a nadir in the stock price cycle and ends with a point which, if not a peak, certainly is far above the price trend during this period. Under both Test I and Test III because of successive additions of capital investment, the latter part of the period is heavily weighted compared with the first part. But the weighting is not the same for Test I as for Test III and with no weighting at all for Test II. How much a correction for the above two points would alter the conclusions drawn is hard to estimate.

Finally Mr. Sloan calculates the profits of the third method (Test III) by allowing the speculator to profit by an average of two-thirds of each upward price swing. Is this too much of a compliment to the intelligence of the average speculator? At one point the author warns the reader that his results "do not purport to prove that catching two-thirds of *any* long up-swing is average performance" (p. 126). But at another point he states: "If he had been an intelligent and well-informed operator, rather than an imaginary one whose dealings were directed by purely mechanical methods, he might have done considerably better than this [referring to obtaining two-thirds of the average swing]. The point is that, in using this particular mechanical device for establishing theoretical buying and selling prices, we do not feel that we are giving to our theoretical speculator an unfair advantage. Indeed the method employed tends to underplay his possible profits, rather than exaggerate them" (p. 39). The part in brackets was inserted by the reviewer. Had a more conservative fraction than the two-thirds been used and for either three or four complete cycles instead of three and one-half cycles, the results would have been considerably different.

The author has an easy style, approaches his subject without apparent bias and as a result has prepared an interesting and stimulating monograph.

G. WRIGHT HOFFMAN.

MACNAIR, H. F. *China's International Relations and Other Essays.* Pp. vii, 326. Price: Trade, $2.00; School Edition, $1.20. Shanghai: The Commercial Press, 1926.

Seldom is it possible to secure so authoritative and sympathetic a statement of contemporary international and missionary problems confronting China as is found in this volume. The author is recognized in the country of which he writes as an analytical student of Chinese history and politics, and enjoys the reputation of being fair and constructive in his criticisms of Chinese and Westerners alike.

The essay from which the title of the volume is derived was originally prepared for and published by the North China Branch of the Royal Asiatic Society in 1925. A remarkably concise account is given of the periods of intercourse between China and the West, with illuminating quotations from Chinese documents showing the attitude of superiority assumed by the Sun of Heaven before the time of European military expeditions in China commencing about the middle of the nineteenth century. Another essay deals with the ignorance of Americans regarding Oriental psychology and customs, summing up the matter with the comment: "It stands to reason that the understanding of the problems of the Pacific and the Far East must not be a one-sided one. It is every whit as imperative that America shall come to understand and appreciate the culture of the East as that she shall develop friendly political and commercial relations with the nations of Asia —in fact, she cannot hope permanently to accomplish the latter unless she does the former concurrently."

A third chapter or essay is a contribution of much value to those who would inquire why Japan was able in so short a time to overcome obstacles imposed from without similar in nature to those which China today is contesting. Having studied with care the methods by which European states advanced their material interests, Japan resolved to progress by the same processes. In the words of Professor MacNair: "A careful study of Japan's dealings with Korea and China in particular, and with other nations in general, cannot fail to impress one with the aptness of Japan as a student in learning and applying the worst tricks of European diplomacy in its modern foreign relations, as well as of assimilating some of the finer parts of Western culture in certain sections of the country."

A considerable portion of the book is devoted to a survey of the status of Christianity in China. The account of the history of Christianity in this particular field of missionary endeavor first was read as a paper before the Shanghai Missionary Association, November 3, 1925. Each of four periods of Christian activities, viz., the Assyrian or Nestorian, the Catholic Franciscan and Neo-Assyrian, the Catholic Jesuit, and the modern Catholic and Protestant, is described in sufficient detail to give the reader a clear impression of the nature of the work and the difficulties to be overcome. Among the most valuable features of this particular essay are the statements of reasons for the failure of Christianity to survive in each of the three periods preceding the present one, and suggestions as to the probable and possible outcome in the immediate future. The pages of the article on missionary ethics will be read with great interest by all who are associated with or interested in the evangelical movement in China, touching upon as it does some outstanding problems which must be met before the Christian cause can attain complete success. Seldom is the issue so squarely presented, so that all may be informed upon the facts of the situation.

W. Leon Godshall.

Zimmern Alfred. *The Third British Empire.* Pp. 148. Price, $2.00. New York: Oxford University Press, 1926.

The Third British Empire is that which has existed since 1918; the first was overthrown in 1776, and the second culminated in the World War. In a series of five lectures originally delivered at Columbia University in 1925, and brought up to date for publication in the summer of 1926, Mr. Zimmern has outlined the internal and external situation of this Third Empire.

When other empires—for example, the Russian Empire or the Austro-Hungarian Monarchy—fell under the blows of the war, the British Empire continued, although in a changed condition. Why? In spite of centrifugal forces, the British spirit of liberty vitalized the old Empire into a Commonwealth of Nations. How has it survived? In what form? As a British

Entente within a larger League of Nations. What must it do to justify its survival in an age which seems destined to dissolve empires? By pioneering in the field of war-prevention: in inter-racial relations, in economic relations, in the problem of nationality. These three questions are set by the author in the opening paragraphs, and answered as has been briefly indicated.

Mr. Zimmern does not feel that the Empire is in all cases following the path likely to lead to the best results, either for itself, or for the world. However, at times, in commenting on the larger implications of a given situation, he seems to fail to recognize serious blunders in empire policy, such as have arisen in India and Egypt. Altogether, the book is a stimulating résumé of empire problems from a British viewpoint, broad in interpretation, and optimistic in outlook.

W. M. BLAISDELL.

HEALY, WILLIAM, M.D., and BRONNER, AUGUSTA F., PH.D. *Delinquents and Criminals.* Pp. xiii, 317. Price, $3.50. New York: The Macmillan Company, 1926.

This volume is a pioneer in its field. It is a scientific study showing in what measure we have been successful in the handling of juvenile delinquents. Four thousand actual cases furnish the details for definite and remarkable conclusions concerning this vital question of national importance.

The work presents several outstanding and unusual features. A new aspect of the situation is shown by a comparison of two thousand cases of juvenile delinquency in Boston with two thousand similar cases in Chicago showing methods of treatment and degree of success or failure in results of both. All cases were studied first during juvenile court age and follow-up work was completed only after the child was well over juvenile court age.

The comparison of the work in the two cities shows the failure of both to meet their problem. We, therefore, readily acknowledge that the same failure exists in all other American cities with perhaps the exception of those in which special work has been done: Example (Denver), as the same type of homes, sentences and instruction are nation-wide and a crime that will send a boy to the House of Correction in Chicago will demand the same punishment in New York or San Francisco.

A large number of charts found throughout the book and in the appendix give statistics on all phases of the work such as percentage of success and failure in committed and uncommitted cases, health, mentality, condition of homes and community. Other charts present age, weight correlation, race, type of crime and type of correction tried.

The book is based on fact and the facts are compiled in these charts which are made quite clear by the accompanying explanation.

The reports are based on the individual case study method. An individual study has been made of each case cited and the results show clearly the futility of the use of any other method in the study of crime if success is to follow the treatment. It shows the utter hopelessness of using the same methods of treatment, year after year, and using the methods in relation to the crime committed rather than adjusting the remedy to the individual personality.

No person can read the book without a realization of the vastness of the work and the undeniable effort to present facts as they really are. It reveals that between forty and fifty per cent of the cases treated in Boston and Chicago are unsuccessful. This undoubtedly condemns the present system and confronts the novice with the seriousness of the delinquency problem and the need of radical changes in the method of dealing with the juvenile offender. It should also be placed in the hands of all people dealing with delinquents, as it proves the absolute need of treatment that meets the different needs of the individual and of research that will furnish a vast store of professional literature of the nature of this work.

The conclusions of the authors are quite worth while in themselves as they are not only based on the cases within the covers of the book but have grown out of the extensive experience in the field of Drs. Healy and Bronner.

G. BAKER THOMPSON.

HADFIELD, SIR ROBERT A. *Metallurgy and Its Influence on Modern Progress, with a Survey of Education and Research.* D. Van Nostrand Co., 1926.

The author of this book has been an outstanding pioneer in the discovery and manufacture of steel alloys. This volume he apparently wrote as a diversion from, and summation of, particularly his personal contributions to their development.

This book deals chiefly with the historical development of alloy steels (1882–1926) and appends a sketchy survey of the facilities for metallurgical research, particularly in Great Britain. There is very little concerning the application of alloy steels in modern industry, and no statistics to indicate precisely their increasing importance. The volume contains some introductory chapters on the earlier history of science and of metallurgy in particular, but in this field the author has only the very slightest scholarly acquaintance. There is a lengthy chapter on "Fuel Economy," but this is a study of a very narrow part of this tremendously important aspect of industrial and general cultural history—reviewing almost solely fuel economy in the production of iron and steel, of especial interest to the author in his capacity of manufacturer of those products.

The title is, therefore, seriously misleading as to the scope of the book. It serves chiefly to re-suggest the need for truly scientific study not only of the history of metallurgy—which is here and there being worked out—but of all the essential aspects of the influence of evolving metallurgy on the development of human culture. On this subject there is no general treatise of note, and but a few scattered papers.[1]

WILLIAM CHRISTIE MACLEOD.

AGG, THOMAS R., and BRINDLEY, JOHN E. *Highway Administration and Finance.* Pp. x, 382. Price, $5.00. New York: McGraw-Hill, 1926.

Professor Agg, of the engineering faculty, and Professor Brindley, professor of economics at Iowa State University, have collaborated in bringing out a text dealing with the legislative enactments required to provide a stable basis for highway developments, with financing plans for highway systems, and with the organization and functions of state or municipal highway departments.

The work is based very largely upon well-selected material from current literature upon the subject of highway construction, finance and regulation, but it is well salted with observations, comments and criticisms by the authors. The text is liberally sprinkled with excellent suggestions for collateral reading so that the reader is given a taste of the problem in this treatise and expert direction for a broader and deeper study of the subject through the footnotes and references.

G. L. WILSON.

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[1] For example: Eckel, *Coal, Iron and War,* 1922; W. Hough, *Man and Metals,* Proc. Wash. Acad. of Sciences, V. 2, 1916; MacLeod, *Fuel in Early Civilization,* Amer. Anthrop., 1925; and discussions on iron culture in Asia in Bishop's and Laufer's Studies of Chinese and Japanese culture origins

Index

AERIAL GLOBE TROTTING. Captain Leigh Wade, 86–93.
AERIAL PHOTOGRAPHY, ITS DEVELOPMENT AND FUTURE. Sherman M. Fairchild, 49–55.
Aerial photography: early cameras, 49; Fairchild Aviation Corporation, 49, 53; improvements, 51, 731; mapping, 50, 51; Model-K8, 49.
Aerodynamics, development of, 20.
AERONAUTICAL, TWO SCIENCES—MEDICAL AND. Arthur La Roe, 124–9.
AERONAUTICAL EDUCATION. Alexander Klemin, 20–2.
Aeronautics. *See* aviation, education, medical science, meteorology.
Air Commerce Act, 56, 111, 141.
Air Corps Reserve, 25.
AIR MAIL, THE. W. Irving Glover, 43–8
AIR REGULATIONS. William P. MacCracken, Jr., 118–23.
Air Regulations: Air Commerce Act, 118; approved type certificate, 119; marks, symbols, descriptions, 121; navigation facilities, 122; requirements for pilots, 120; requirements in operation, 121; traffic rules, 122; violations, 119.
Air traffic rules, 122.
AIR TRANSPORT, AMERICAN. Archibald Black, 68–70.
Air transport: American operations, 69; costs, 70; origin, 68; passenger service, 69; recent developments, 68. *See* economic aspects.
AIR TRANSPORTATION. Anthony H. G. Fokker, 182–7.
AIRCRAFT ENGINEERING. T. P. Wright, 27–33.
AIRCRAFT MERCHANDISING PLANS OF THE ALEXANDER AIRCRAFT COMPANY. J. Don Alexander, 137–40.
AIRPLANE ENGINE, THE STORY OF THE. George F. McLaughlin, 34–7.
AIRPLANE, THE. Dr. Michael Watter, M.S.A.E., 7–13.
AIRPLANES IN NATIONAL DEFENSE. General William Mitchell, 38–42.
Airplane. *See* aviation, design, engineering, flight, heavier-than-air, lighter-than-air, mechanical construction, power plant.
Airplanes: defined, 79; dusting, 74.
AIRPORTS AND LANDING FIELDS. William E. Arthur, 56–67.
Airports: Buildings, 65; cost, 65, 66, 67; diagrams, 60, 61; flood light, 58; hangar and passenger station, 58; layout, 62; lines, 56, 57, 60; necessity for, 56; new and proposed routes, 57; proposed New York University airport, 62; site, 60.
Airships, defined, 79.
Airways, 72, 78.
Airworthiness: dangers eliminated, 152; false publicity, 151; fearful public, 151; progress in U. S., 157; safeguards, 155.
AIRWORTHY, ARE WE? Lieutenant Donald Duke, 151–8.
ALEXANDER, J. DON. Aircraft Merchandising Plans of the Alexander Aircraft Company, 137–40.
AMERICAN AIR TRANSPORT. Archibald Black, 68–70.
ARE WE AIRWORTHY? Lieutenant Donald Duke, 151–8.
Army Air Corps Flying School, 25.
ARTHUR, WILLIAM E. Airports and Landing Fields, 56–67.
AVIATION INSURANCE. Charles H. Holland, 130–6.
Aviation: *See* air Commerce, air regulations, air transport, airports, airworthiness, commerce, commercial aviation, development, economic aspects, education, engines, first trans-Atlantic flight, insurance, licenses, lighter-than-air, medical science, merchandising, meteorology, national defense, navigation, pilots, Post Office, round-the-world, routes.

BLACK, ARCHIBALD. American Air Transport, 68–70.

Casualties, 125–6.
CLEARING THE AIR FOR COMMERCE. W. Jefferson Davis, 141–50.
Climate. *See* meteorology.
COMMERCE, CLEARING THE AIR FOR. W. Jefferson Davis, 141–50.
Commerce: Act of Congress, 141, 142; Connecticut law, 144; disputes, 148, 149; laws abroad, 145; need for federal laws, 144; regulations, 143; United States and the International Convention, 147.
COMMERCIAL AVIATION IN THE UNITED STATES, ASPECTS OF. George B. Post, 71–8.
Commercial aviation: classes, 77; dusting, 74; early airways, 72; history, 71, 72; photography, 73; pioneers, 75; present era, 75, 76; routes, 78; struggles, 72.
Connecticut law, 144.
Curtiss Flying Service, Inc.: future plans, 25; work of, 23.

DAVIS, W. JEFFERSON. Clearing the Air for Commerce, 141–50.
Defense. *See* national.

Department of Commerce regulations, 24.
Design: body, 11; engine, 10, 14; landing gears, 11, 12; power plant, 10; procedure as to wings, 7, 8.
Development, 27, 28.
Disasters, 79, 80.
Dispute, 148, 149.
DUKE, LIEUTENANT DONALD. Are We Airworthy? 151–8.

ECONOMIC ASPECTS OF AIRCRAFT TRANSPORTATION, SOME. Stephen B. Sweeney, 159–81
Economic aspects: air mail, 177–8; demand, 169; development, 161; future, 179–81; operating costs, 167; subsidy, 161, 64; various nations, 170–7.
EDUCATION, AERONAUTICAL. Alexander Klemin, 20–2.
Education: aerodynamics, 20; grants to, 22; plans, 22; schools, 21, 22; structure of aircraft, 21; university training, 20.
ENGINE, THE STORY OF THE AIRPLANE. George F. McLaughlin, 34–7.
Engines: advance dependent on, 35; Anzani, 35; Benz, 35; Diesel, 36; early types, 34; Gnome, 35; Mercedes, 35; Napier "Club," 36; Packard, 36; requirements for, 36; Wasp, 36; Whirlwind, 36.
ENGINEERING, AIRCRAFT. T. P. Wright, 27–33.
Engineering: aeronautical, 30; civil, 31; definitions, 37; general, 31; history, 27–8; materials, 31; mechanical, 31; naval architecture and, 29; present state of the art, 29.
Equipment, 32.
Europe, engines, 36.

FAIRCHILD, SHERMAN M. Aerial Photography, Its Development and Future, 49–55.
First Trans-Atlantic flight: difficulties, 96; eastward, 94; experiences, 96–100; fog, 96; sentiment, 94; triumphs, 98–100; with the *NC-4*, 95–6.
FLIGHT, THE FIRST. Jessie E. Horsfall, 14–19.
FLIGHT, THE FIRST TRANS-ATLANTIC. Lieutenant Walter Hinton, 94–100.
Flight: ancient stories, 1; difficulties, 17, 18; eighteenth century, 4; first recognition, 4; Francisco Lana's study, 3; history, 1–6; Leonardo Da Vinci's contribution, 3; middle ages, 2; tests, 17, 18; *see also* aviation, first trans-Atlantic flight, round-the-world flight.
Flight surgeon, 124–9.
FLY, LEARNING TO. Casey Jones, 23–6.
Flying safe, 124.
FOKKER, ANTHONY H. G. Air Transportation, 182–7.
Forecasts, 115.

Germany, 80, 81.
GLOVER, W. IRVING. The Air Mail, 43–8.
GOLDSBOROUGH, BRICE. Navigating the Plane 101–6.
Great Circle Track, 104.
GREGG, WILLIS RAY. Meteorology and Its Application to Flying, 107–17.
Guggenheim Foundation, 22.

Hazards, 82.
Heavier-than-air craft, defined, 79.
HINTON, LIEUTENANT WALTER. The First Trans-Atlantic Flight, 94–100.
HOLLAND, CHARLES H. Aviation Insurance, 130–6.
HORSFALL, JESSIE E. The First Flight, 14–19
HUMAN FLIGHT THROUGHOUT THE AGES Adrian Van Muffling, 1–6.

Insect control by airplane dusting, 74
Instruments, 103, 106.
INSURANCE, AVIATION. Charles H. Holland, 130–6.
Insurance: all-in-one coverage, 131; causes of loss, 134; effect of protection on flying, 135; history of transportation, 130; opinion of practical airmen, 136; rates, 131; types of losses, 132, 133.
International Convention and the United States 147.

JONES, CASEY. Learning to Fly, 23–6.

KLEMIN, ALEXANDER. Aeronautical Education, 20–2.

LANDING FIELDS, AIRPORTS AND. William E. Arthur, 56–67.
LA ROE. Two Sciences—Medical and Aeronautical, 124–9.
Landing gears, 11.
LEARNING TO FLY. Casey Jones, 23–6.
Licenses: mechanics, 121; numbers for aircraft, 121; pilots, 120.
LIGHTER-THAN-AIR CRAFT. P. W. Litchfield, 79–85.
Lighter-than-air craft: dangers, 82; defined, 79; developments, 83, 84; Germany, 80; hazards, 82; triumphs of, 82.
Lighting, 59, 63, 64.
LITCHFIELD, P. W. Lighter-than-Air Craft. 79–85.

MACCRACKEN, WILLIAM P., JR. Air Regulations, 118–23.
Mail. *See* Post Office.
Mathematical bases, 16.
MCLAUGHLIN, GEORGE F. The Story of the Airplane Engine, 34–7.
Mechanics licenses, 121.
Mechanical construction, 7–13.

EDICAL AND AERONAUTICAL, TWO SCIENCES—. Arthur La Roe, 124–9.
edical science: aviation medicine, 126; analysis of casualties, 125, 126; flight surgeon, 127; makes possible conquering air, 129; relation to aeronautics, 124–9.
ERCHANDISING PLANS OF THE ALEXANDER AIRCRAFT COMPANY, AIRCRAFT. J. Don Alexander, 137–40.
erchandising: advantage, 140; convincing the public, 137; instruction, 138; purchase plans, 139; representatives, 139; selling organization, 138.
ETEOROLOGY AND ITS APPLICATION TO FLYING. Willis Ray Gregg, 107–17.
eteorology: aiding aeronautics, 107; climatic characteristics, 109; early interests, 107; expansion of service, 112; forecasts, 115, future, 116, 117; kites, 110; kite meteorograph, 110; pilot balloon stations, 112; theodolite, 114.
MITCHELL, GENERAL WILLIAM. Airplanes in National Defense, 38–42.

NATIONAL DEFENSE, AIRPLANES IN. General William Mitchell, 38–42.
National Defense: ancient and modern methods, 38; defined, 38; improvements, 38; in the air, 39, 40, 41; on the sea, 39.
AVIGATING THE PLANE. Brice Goldsborough, 101–6.
avigation, art of, 101; compass, 103; ground work, 102; instruments, 103; meteorological information, 105.
ight flying, 45.

assenger services, 69.
Pilot balloon stations, 112.
Pilots: requirements, 120; scarcity of, 25; training, 23, 24.
PLANE, NAVIGATING THE. Brice Goldsborough, 101–6.
POST, GEORGE B. Aspects of Commercial Aviation in the United States, 71–8.
Post Office: Service accomplishments, 48; growth, 44; history, 43; night flying, 45; planes used, 43, 44; rates, 44; routes, 43, 47.
Power plant, 10.
Propellers, use of, 14, 15.

Radio stations, 47.
Regulations. *See* air.
Research, 82.
Round-the-world: Atlantic flight, 91; Aleutian Islands, 87; China, 89; Constantinople, 91; end of journey, 93; experiences encountered, 87; fogs and icebergs, 92; India, 91; Japan, 89; living accommodations, 88; Malay peninsula, 90; Paris, 91; preliminary work, 86; start-off, 86.
Routes, 43, 178.

Safeguards, 155.
Scientific aspects. *See* engineering
Structure, instruction in, 21.
SWEENEY, STEPHEN B. Some Economic Aspects of Aircraft Transportation, 159–81.

Theodolite, Weather Bureau, 114.
Training. *See* pilots.
Triumphs, 82.
TWO SCIENCES—MEDICAL AND AERONAUTICAL. Arthur La Roe, 124–9.

United States: advantages and disadvantages, 84; International Convention, 147; meteorology work, 107–17; progress in, 157.

VAN MUFFLING, ADRIAN. Human Flight Throughout the Ages, 1–6.

WADE, CAPTAIN LEIGH. Aerial Globe Trotting, 86–93.
WATTER, DR. MICHAEL. The Airplane, 7–13.
Weather difficulties, 44.
Weather. *See* hazards, meteorology.
WRIGHT, T. P. Aircraft Engineering, 27–33.
Wright, Wilbur and Orville, 14–9.